BRITISH MEDICAL JOURNAL

LONDON SATURDAY FEBRUARY 7 1942

INDUSTRIAL EYE INJURIES*

BY

Sir ARTHUR MacNALTY, K.C.B., M.D., F.R.C.P., F.R.C.S.

Sometime Chief Medical Officer to the Ministry of Health

The industrial worker depends chiefly upon sight for his livelihood. Blindness or impairment of vision, therefore, is the most serious and most costly of all non-fatal accidental risks to the worker, ranking second only to death.

In industry, blindness and impairment of vision may be due either to disease or to accident. Apart from miners' nystagmus, disease contributes a small proportion of eye lesions, but the amount of injury to vision caused by accidents is considerable, and is accentuated by the danger of sympathetic ophthalmia. Nor should the economic loss to industry resulting from such accidents be ignored.

Classification

An international classification of the causes of impaired eyesight and of blindness is much needed. Both British and American classifications have been prepared, and were placed before the International Association for the Prevention of Blindness, which met in connexion with the International Congress of Ophthalmology in Madrid in April, 1933. It is understood that the International Association has an international classification under consideration, and it is to be hoped that after the war it may be successful in securing a comparable measure of uniformity in this respect.

Industrial Diseases affecting Eyesight.—Occupational diseases which affect eyesight can be classified under (*a*) the results of exposure to heat rays—e.g., glass-workers' and iron-workers' cataract; (*b*) miners' nystagmus; (*c*) the toxic effect of certain substances—e.g., lead, derivatives of benzene, carbon bisulphide, and methyl alcohol. Apart from miners' nystagmus, the Ministry of Health Departmental Committee found that the number of cases of serious impairment of vision caused by these diseases was in all probability very small. The dangers to eyesight involved are, however, serious, and the committee noted that this relative immunity from grave eye injury is dependent on the maintenance of the stringent precautions taken.

Affections of the Eye in Processes involving Intense Light and Heat

Glass-workers' Cataract

This affection, which takes the form of a posterior-cortical cataract, different in character from ordinary senile cataract, is peculiar to those who are exposed to the heat and glare of a furnace (not necessarily a glass furnace) for many hours each week. It is a disease of slow onset, and its occurrence until after from fifteen to thirty years of work is said to be rare. It is apt to affect certain classes of glass-workers exposed to incandescent light. The late Sir Thomas Legge examined 513 men engaged in gathering, blowing, H.A. finishing, and flattening glass, and found lens changes in nearly 20%, though not all those affected had defective sight. When mature the cataract can be extracted with probability of success. It is evident that a considerable loss of working capacity may occur. In 1908 a committee of the Royal Society found: (1) that the luminous rays are not the cause of the disease; (2) that ultra-violet radiation is not the cause in so far as any direct action upon the lens of the eye is concerned; (3) that the evidence is strongly in favour of the view that heat is the active agent; (4) that it is uncertain whether the heat radiation acts directly on the substance of the lens or indirectly by disturbing the nutrition of the lens; (5) that possibly ultra-violet radiation may play some part in the causation by indirect action on the nutrition of the lens.

The report added that further investigation was needed as to the effect of heat radiation on the eye and into the manufacture of glasses which absorb heat radiation.

Prevention.—The committee of the Royal Society devised a variety of special glasses to prevent the harmful radiations from reaching the eye. Unfortunately, glass-blowing has to be done in great heat, and the resulting perspiration causes the wearer discomfort from the glasses and obscures vision. Prevention is therefore better ensured through the machinery for glass-bottle making, which is now superseding hand operations and greatly lessens danger from the glare of the furnace. Iron-workers are affected by a similar form of cataract. Prevention is ensured by the use of appropriate glasses.

Eye Affections due to Exposure to Ultra-violet Radiation

Workers in electric arc welding are liable to temporary disabling eye trouble, the symptoms of which are pain, photophobia, conjunctivitis, and headache. Similar transient eye troubles may occur in actors, producers, photographers, and electric lighting operatives in cinema studios where unscreened lamps are used.

As a result of an investigation by the Departmental Committee (1921) the Incorporated Association of Kinematograph Manufacturers, Limited, an association which comprises practically all the film-producing firms in this country, gave its assurance to the Minister of Health that no members of the association would permit any open-arc lights to be used in their studios for general illumination without glass filters.

Corneal Ulceration due to Pitch

Workers in processes in which pitch is employed, such as patent fuel manufacture, are liable to forms of ulceration. In some cases the cornea is ulcerated, but, on the whole, not frequently. The men chiefly exposed are those breaking up pitch, either in loading or unloading trucks or vessels, or those in patent fuel works. Goggles or pieces of crêpe of fine mesh afford protection.

Nystagmus

Nystagmus occurs among those workers who year in and year out subject their eyes to abnormal and unaccustomed movements. Associated symptoms are complaints of objects dancing before the eyes, headaches, dizziness, and general fatigue, all of which symptoms clear up quickly if a change of work is made. The involuntary movements of the eyeball characteristic of nystagmus may exceptionally be induced by occupational causes affecting the eyes through the central nervous system or by some extraneous cause.

The incidence of miners' nystagmus in Great Britain is high. For several years past the number of persons in

* A lecture delivered in the course for the Diploma in Ophthalmology, University of Oxford, November 28, 1941.

receipt of compensation has averaged nearly 10,000; of these about 2,000 were fresh cases receiving compensation for the first time during the year. It is estimated that the cost of compensation is at present about £450,000 a year for this disease alone.

Miners' nystagmus was the subject of prolonged investigation by committees of the Medical Research Council, which recorded their comprehensive findings in three reports. The main conclusion was that the essential factor in the production of miners' nystagmus was deficient illumination, that workers at the coal face are more affected than other underground workers, and that the disease might occur with or without the presence of oscillations.

The Miners' Nystagmus Committee further recommended that everything possible should be done to make the standard of illumination of the objects looked at by the miner equal to that of an open-light pit, particularly by increasing the illuminating power of safety-lamps, by the use of electric lamps attached to the miner's head or belt, and by whitewashing. They also considered that it is highly desirable to keep men suffering from the disease employed above ground. The chief findings of the committee were endorsed by the Ministry of Health Departmental Committee, and the end of the year 1933 saw the formal publication under Section 86 of the Coal Mines Act, 1911, of draft general regulations designed to regulate and improve the standard of lighting in and about mines. These regulations, as the Secretary of Mines anticipated, in their effect are calculated not only to ameliorate nystagmus and reduce the general accident rates, but also to tend towards greater efficiency and economy in the working of mines.

The whole question of miners' nystagmus was reconsidered by a Departmental Committee of the Home Office on certain questions arising under the Workmen's Compensation Acts. The committee's report (1938) is well worth reading. The medical evidence given to the committee was overwhelmingly to the effect that miners' nystagmus cannot occur without the presence of oscillations, and that men ought not to be certified as suffering from miners' nystagmus unless at the time of certification oscillations are actually present. The existing definition of the disease is therefore regarded as being too wide, and results in the inclusion of cases of unrelated psychoneurosis.

Industrial Poisons affecting the Eyes

The continued introduction during the past twenty years of industrial processes which necessitate the use of new poisonous substances has added to the number of toxic risks involving various forms of injury to the eye and its accessory nerves. Resnick and Carris (1924) note that in the United States the enormous increase in the production of dye-stuffs and other chemicals since the last war has considerably augmented these risks. The Bureau of Labor Statistics, United States Department of Labor, gives a list of fifty-two different poisons used in industrial processes; in at least half of the cases cited it is said that more or less serious injury to the eyes results from continuous handling of the poisons or continuous work in close proximity to them. Workers usually inhale these poisons in the form of vapour, but the inhalation of dust may produce equally harmful effects. Direct action of the poison through or on the skin is another method of entry; and sometimes the poison is admitted through foodstuffs, cigars, cigarettes, chewing-tobacco, etc., handled by the worker with hands from which the toxic substance has not been thoroughly cleansed.

In the United States the following substances are held to be especially productive of serious results to the eyes: ammonia, benzol, and the other intermediates of the dye industry, brass, carbon bisulphide, dimethyl sulphate, hydrofluoric acid, lead, methyl alcohol, methyl bromide, nitroglycerin, and phosphorus. In this country the principal substances that may be implicated are lead, derivatives of benzene, carbon bisulphide, and methyl alcohol. These industrial poisons usually irritate the mucous membranes, giving rise to lacrimation and flashes of light before the eyes. Other results may be discoloration of the conjunctiva, disturbances of visual sense, retrobulbar neuritis, choroiditis, dilatation of the pupils, photophobia, clouding of the cornea, diplopia from paralysis of the ocular muscles, amblyopia, protrusion of the eyes, contraction of the pupils, ulceration of orbital bones, shrinking of the eyeballs, erosion of the cornea, transient blindness, progressive atrophy of the optic nerve, and permanent blindness.

We may now consider the principal industrial poisons and their injurious effects on eyesight in more detail.

Lead Poisoning.—Lead poisoning is usually caused by inhalation and absorption of dust and fumes. In addition to the well-known general manifestations of lead poisoning, lead encephalopathy may occur, and may prove fatal. Optic neuritis also occurs, and may result in blindness even though life is not destroyed. Albuminuric retinitis is sometimes noted. The industries in which lead poisoning had been seen are numerous. Under Section 66 of the Factories Act, 1937, a statutory obligation to notify the Chief Inspector of Factories is placed on every medical practitioner in attendance on a patient whom he believes to be suffering from lead poisoning contracted in a factory. On the receipt of such notification a report on the case is obtained from the examining surgeon for the district. Statistics show that a great reduction in total lead poisoning has taken place within the last twenty years. So far back as 1919 this had been shown, for there were 1,258 cases of lead poisoning in 1899, 646 cases in 1908, 445 cases in 1914, and only 207 cases in 1919. Since then further reductions have occurred, there being as few as 109 cases in 1939. In the past, cases of blindness due to lead poisoning were usually found in institutions for the blind; at the present time there are practically none. The prevention of visual impairment and blindness due to lead poisoning is a part of the prevention of lead poisoning in general. The dangers of this industrial risk are so great that stringent precautions are enforced, and the industries concerned are well controlled in this respect. Now, therefore, cases of eye disease due to lead seldom come before the ophthalmic surgeon. The risks are the same, but prevention has been most successful in this industrial field.

Derivatives of Benzene.—The chief of these benzene derivatives are dinitrobenzol and trinitrotoluene. Dinitrobenzol is employed in the manufacture of mining explosives. It is highly toxic and affects the general system of the body chiefly through absorption by the skin. Optic neuritis may be a concomitant of such poisoning, but there is no record of the eyesight being affected by this poison since 1914. The Ministry of Labour prescribes special regulations concerning the use of this and similar substances. Trinitrotoluene is much used in munition work during wartime, but no certain cases of optic neuritis due to its employment have been reported.

Carbon Bisulphide.—The uncontrolled use of carbon bisulphide acts quickly on the central nervous system, producing optic neuritis. Progressive failure of vision due to retrobulbar neuritis has been recorded. Other conditions reported are severe amblyopia, and ocular disturbances (diminution of visual acuity, retraction of the visual field, and some disturbance of colour vision) going on to amblyopia in a few cases; fatigue of accommodation has also been noted. Carbon bisulphide is used on a large scale in vulcanizing india-rubber and in the manufacture of artificial silk. Since 1897 its use has been governed by special rules and regulations, the most important of which is the requirement of downward exhaust ventilation. The workers are examined every month by the certifying surgeon. No cases of optic neuritis caused by carbon bisulphide have come to the notice of the Ministry of Labour during recent years.

Methyl Alcohol (Wood Alcohol).—Methyl alcohol is used as a solvent for shellacs, varnishes, and finishes in the manufacture of many common articles, and in the chemical industries and in pharmacy; it is also occasionally used as an illuminant and cleaning fluid, and in the United States it is said to be not infrequently consumed, disguised or undisguised, as a beverage. No authenticated instances of injury to eyesight have been

reported in this country, but in the United States Resnick and Carris (1924) regard the risk of loss of vision, very frequently permanent, as most serious. Amblyopia, which is bilateral, occurs within a few hours of exposure or sometimes after several days. Often transient at first, it recurs and may be followed by complete and permanent blindness. Before actual blindness occurs there may be pain and tenderness on pressure of the eyes, dilated pupils, fogginess and blurring of the vision, diplopia, or ptosis. There is an increasing contraction of the visual fields for form and colour, congestion of the sclera, pallor of the disk, central scotoma, and much reduction of visual acuity. The exact aetiology of the optic atrophy present is still in question. De Schweinitz (1931 explains it as an optic neuritis, temporarily subsiding but followed by atrophy. Ziegler (1921) considers that the original lesion is a slow retro-bulbar neuritis, which is followed by shrinking of the nerve head or by sudden sclerosis. McCord (1932) and others believe the retinal ganglion cells are first affected, the changes in the optic nerve being due not only to the direct action of methyl alcohol, but to accompanying oedema also. C. Baskerville (1913) reported more than a thousand casualties from the use of this poison. A number of States in America have adopted various legislative measures for controlling the dangers due to the use of methyl alcohol.

Other Eye Diseases in Industry

These diseases are not directly due to industrial conditions, and occur among the general population. Industrial conditions might, however, favour the spread of contagious forms of them—e.g., venereal eye diseases (gonorrhoeal ophthalmia) and trachoma. These risks are considerably lessened by the hygienic precautions now taken in industrial management and more generally by the national schemes for the prevention and treatment of venereal diseases; while, owing to enforcement of the Aliens Immigration Act, cases of trachoma are very infrequent in this country.

Occupations involving the Risk of Eye Accidents

Generally speaking, in all industries the risk of injury to the eye is present, though in some there is more risk than in others. A broad classification of occupational accidents is as follows: (1) those occurring in factories; (2) those occurring in mines and quarries; (3) those occurring in agricultural and other occupations.

Eye Accidents in Factories

It has already been pointed out that eye accidents in factories, and in industry generally, constitute by far the largest proportion of cases of impaired eyesight or of blindness among industrial workers.

The majority of such eye accidents are caused by flying fragments of metal, stone, grit, and other substances; 63.3% of the eye accidents in the Sheffield district occurring in a particular year were due to flying particles, and another 13.25% to flying tools and fragments of tools. Of the accidents in metal and engineering industries (including shipbuilding) 68% are due to similar causes (McBride). Splashes of molten metal or chemicals are the principal cause of the remaining eye accidents. In the United States it is estimated by T. D. Allen and H. F. Carmen, jun. (1941), that as many as 80% of all accidents to the eye are due to flying fragments. The process in which eye accidents occur is the significant factor and not the particular industry.

Mines and Quarries

It is interesting and somewhat surprising to find that mining and quarrying take precedence even over the metal-producing and metal-working industries in severity of eye accidents. The risk is naturally greater in quarries raising igneous rocks than in coal-mines, but, as the Report on the Prevention of Blindness observes, in the latter industry a larger number of men are exposed to the risk, and eye accidents are more serious because of the conditions in the mines and the distance which an injured man may have to travel before he can receive treatment.

Between 1920 and 1933 the incidence of eye accidents in coal-mines involving absence from work for more than seven days rose from 3.71 to 5.73 per 1,000 persons employed. It seems probable that the more general use of coal-cutting machinery in recent years is largely responsible for the rise in the accident rate. In the United States eye injuries (including many cases of complete blindness) are highest in coal-mines. In British quarries raising igneous rocks the eye accident rate in 1933 was 8.9 per 1,000 persons employed. The Report of the Royal Commission on Metalliferous Mines and Quarries of 1914 (p. 110) deals with the risk of eye accidents in these quarries, and concludes that eye accidents are commonest among granite-workers, less frequent among limestone-workers, and least common among sandstone-workers. Granite-cutting is a comparatively small trade, but the risk of eye injury is exceptionally high in it.

Agricultural and Other Occupations

A certain number of eye accidents occur among agricultural workers in the course of their avocations. The Report on the Prevention of Blindness states: "The majority of these eye injuries occur when men are engaged in hedge cutting and trimming, and accidents are especially liable to happen if the branches are intertwined. The cutting of one branch may release another, which may spring back and strike the man across the face, causing injuries to the eyes. Pitching straw and threshing are also responsible for a number of accidents to the eye from protruding pieces of straw and from foreign bodies which may be contained in the cloud of dust which usually accompanies threshing."

The National Union of Agricultural Workers emphasizes that there is often delay in seeking medical help owing to distance from doctor and hospital. The man is tempted to deal with the injury himself, with consequent special risk of infection to the injured eye.

Road-making and its processes are responsible for eye injuries. The chipping of stone or the glass of pavement lights, the fitting of paving-stones, etc., are often done without any protection to the worker, whereas the passer-by is sometimes protected from the risk of flying chips by a screen. Local authorities might consider using their powers for the prevention of blindness (under Section 66 of the Public Health Act, 1925) for the protection of these workers.

Lesions produced by Eye Accidents

These eye lesions are of all degrees of severity, ranging from the transient conjunctivitis due to the entrance of a foreign body to complete destruction of the eyeball and loss of sight in one or both eyes.

Perforating wounds or lacerations of the eyeball may occur; foreign bodies may pierce and lodge in the eyeball; corneal ulceration, purulent keratitis, purulent choroiditis, and panophthalmitis may ensue. Acids or burns may partially or completely destroy the sense of sight. In this connexion it should be remembered that most of the foreign bodies which enter the eye in industrial processes are hot, and thus the injury is not only a wound but a burn. Removal of the charred tissue—e.g., by a curette—is said to diminish the risk of corneal ulceration. Small fragments of metal may perforate the cornea and remain in the eye so that there may be very little evidence of the perforation. Hence all apparently slight injuries require careful examination by the ophthalmic surgeon.

Notification of Industrial Eye Accidents

Accidents in factories and workshops are notified, under the provisions of Section 64 of the Factories Act, 1937, by an occupier to the factory inspector in the following cases:

(*a*) An accident causing loss of life to a person employed in the factory; or (*b*) an accident disabling for more than three days a person employed in the factory earning full wages at the work at which he was employed; or (*c*) an occurrence due to any other special cause, which the Secretary of State (now the Minister of Labour) may specify by regulations, whether death or disablement is caused or not. Statistics of eye accidents will be found in the Annual Reports of the Chief Inspector of Factories. The eye accidents thus tabulated are divided into accidents causing the loss of sight of one or both eyes and other eye accidents. It has been estimated from these figures that some 6,000 eye accidents occur in factories per annum, but the statistics are not complete.

Prevention of Industrial Eye Injuries

The value of preventive medicine in industry is often not appreciated. Some are apt to look upon preventive measures as pure philanthropy rather than as a business proposition which aids industrial output and efficiency. As regards care of the eyes, it has been demonstrated, for instance, that silk-mill workers in an American firm showed an average individual improvement of 6.3% in relative productivity after wearing glasses, as compared with a similar period before their defective vision had been corrected.

It would be well if all entrants to industry were medically examined by a medical practitioner with ophthalmological experience and with power to refer to an ophthalmic surgeon cases on which he required expert advice. The most common visual defects are myopia, hyperopia, astigmatism, and presbyopia. If these are uncorrected in working men and women they favour industrial accidents. It is also important to detect the occurrence of colour-blindness and night-blindness in workers, especially key workers.

The investigations of the Industrial Research Council have shown that certain individuals are more subject to accidents than others. Detection of such "accident-prone" persons at an entrance medical examination would minimize the risk of industrial accidents, including eye injuries. It is also desirable to have periodical examinations of the eyes of workers. In certain industries an ophthalmic surgeon is appointed for this purpose, with good results. The National Ophthalmic Treatment Board Scheme, organized by the British Medical Association in 1929, has on the recommendation of a medical practitioner made the services of consulting ophthalmic surgeons more generally available throughout the country, and it is very desirable that the scheme should be closely associated with industrial welfare work.

In many factories safety committees have been established which are concerned, *inter alia*, with the prevention of eye accidents. These committees also see that first-aid and ambulance appliances are maintained in an efficient state, and that a sufficient number of employees in each department are trained in first-aid and ambulance work. Well-equipped first-aid centres are all-important. No attempt should be made by any workman to remove from the eye or eyes of a fellow-worker a chip or foreign substance of any kind which may have accidentally lodged therein. It should be a cardinal rule that in the event of any accident to the eyes, however trivial it may seem, the worker should go to the first-aid centre. In the past the use of a dirty pocket-handkerchief or the licking by the tongue of the injured eye has been responsible for serious eye infections.

Education of the worker by talks, leaflets, and personal advice concerning the risk of eye injuries in his particular industry and the precautions necessary to avoid these injuries constitutes another important preventive measure. Great emphasis should be laid on early and effective treatment.

Factories should be properly illuminated, and this subject receives considerable attention from the Ministry of Labour (see Home Office Welfare Pamphlet No. 7, "Lighting in Factories and Workshops"). There is a Departmental Committee of the Ministry on Lighting in Factories, and this committee issued in 1940 a fifth report, dealing with natural and artificial lighting in factories in wartime. Following on this report the Minister of Labour, in regulations issued in 1941, has prescribed a standard of lighting for certain factories. Defective illumination is apt to have a serious effect upon vision. It is, as we have seen, responsible for miners' nystagmus, and conduces to the increase of myopia; there is no evidence that, alone, it is a cause of blindness. Glare and shadows are responsible for eye-strain and consequently diminished output in factories. The most important indirect result of defective illumination lies in its undoubted influence on the causation of accidents.

While these, then, are general methods of precaution against eye injuries common to all forms of industry—for there are few large industries in which the risk does not arise—in many occupations further precautions can be taken to reduce the risk. Of almost universal application is the use of masks and goggles in factories, workshops, mines, and quarries, and even in agriculture.

Many workers object to wearing goggles. This may be due to dislike of an innovation which is regarded as "fussiness" or a reflection on the worker's skill; or the bad design of the goggles may cause them to abrade the skin, or the glass to become steamed, thus preventing clear vision.

Goggles should be made of hardened glass and, if necessary, should have protecting side-shields to catch fragments coming from the sides. Any error of refraction must be corrected. The goggles must fit comfortably and must interfere as little as possible with the worker's capacity. Where the workman is exposed to very bright light, as in certain forms of welding, the glass of the goggles should cut off the infra-red and ultra-violet rays, and be coloured to reduce glare. Such workers should wear helmets protecting the whole head rather than simple goggles.

A standard specification of special glass for goggles has been drawn up by British Standards in consultation with the Factory Department. Gauze eye-veils, fitted round the head by elastic, are satisfactory in preventing sparks, small chips, hot brass chips, and splashes of suds and oil from entering the eye. Certain objections to their use have been raised by workers, chiefly as being more suitable for women than for men.

The universal use of goggles in coal-mines is not regarded as practicable, as the miner is opposed to any device which might retard his quick reaction in an emergency. It is sometimes necessary for goggles to be worn in high-velocity dust-laden air currents and in certain processes at the coal-face. Eye accidents in coal-mines are so numerous that extensive investigations are being made by the Mines Department in order to find the most suitable form of eye protection, both from flying particles and from dust. The wearing of goggles by workers in quarries is most desirable.

Other special protective measures in use are guards to prevent injury from flying shuttles (the majority of such accidents occur in the cotton industry), and screens placed on lathes and abrasive wheels to intercept sparks or flying particles of dust. In 1926 the London General Omnibus Company adopted an adjustable celluloid screen at their Chiswick works; they reported in 1927 that they had had no accidents when the guard had been properly used and

adjusted, though in the previous year 68 eye accidents had been recorded.

Section 49 of the Factories Act, 1937, provides that "in the case of any such process as may be specified by regulations of the Secretary of State (now the Minister of Labour), being a process which involves a special risk of injury to the eyes from particles or fragments thrown off in the course of the process, suitable goggles or effective screens shall, in accordance with any directions given by the regulations, be provided to protect the eyes of the persons employed in the process."

Compensation

I cannot enter here into the important question of compensation for industrial workers who are the subject of eye injuries, but several ophthalmic surgeons have kindly directed my attention to two points of some practical importance. One is that delay in the payment of compensation for an eye injury often has a prejudicial effect on the patient's general health, irrespective of any question of malingering; the other is that in weighing up the effect of the loss of one eye in a patient the ophthalmic surgeon should take pains to ascertain whether this has been the "master eye." If this is so, the effects on residual vision will be more serious than if the remaining eye is the "master eye."

Conclusion

It is encouraging to know that modern methods of prevention have greatly reduced the risk of eye lesions from chemical and other processes and that the results of medical research and progress are promptly applied. Eye accidents in mines, quarries, and factories constitute by far the largest proportion of cases of impaired eyesight or of blindness among industrial workers. Their prevention is largely a question of periodical medical examination, of education, of the use of protective appliances in industry, and of prompt ophthalmic treatment.

Ophthalmic surgeons will find in industrial eye-work not only a most interesting special branch of ophthalmology but also opportunities for investigation which may still further prevent impaired eyesight or blindness among industrial workers.

I must express my thanks to Sir John Parsons, Lieut.-Colonel Sir Stewart Duke-Elder, Mr. N. Bishop Harman, Mr. Spencer Walker, Miss Ida Mann, Dr. J. C. Bridge (H.M. Senior Medical Inspector of Factories), and Mr. E. W. Murray of the Home Office Industrial Museum for help and advice in the preparation of this lecture.

BIBLIOGRAPHY

Allen, T. D., and Carmen, H. F., jun. (1941). *J. Amer. med. Ass.*, **116**, 1343.
Baskerville, C. (1913). *Wood Alcohol.* 2nd Rep. Factory Investigating Commission, New York, II, 921.
Browning, Ethel (1937). "Toxicity of Industrial Organic Solvents." Medical Research Council and Industrial Health Research Board, Report No. 80, H.M.S.O., London.
"Causes and Prevention of Blindness." Ministry of Health Departmental Committee Reports. (1) Final Report, H.M.S.O., London, 1922: (2) Interim Report regarding Alleged Dangerous Lights in Kinema Studios, ibid., 1921.
Chief Inspector of Factories: Annual Report for 1920. Report of Committee of the Royal Society on "Glass-workers' Cataract," p. 138, H.M.S.O., 1921.
—— Annual Report for 1939. Cmd. 6251, H.M.S.O., London, 1941.
De Schweinitz, G. E. (1931). *Trans. Coll. Phys. Philad*, p. 221.
Home Office: Report by the Departmental Committee on Certain Questions arising under Workmen's Compensation Acts. Cmd. 5657, H.M.S.O., 1938.
"Industrial Lead Poisoning": Home Office Memorandum. H.M.S.O., 1921.
Legge, T. (1908). "Glass-workers' Cataract." Second Report of the Departmental Committee for Industrial Diseases. Cmd. 4387, H.M.S.O., London.
"Lighting in Factories." Ministry of Labour and National Service: Fifth Report of the Departmental Committee. H.M.S.O., London, 1940.
McCord, C. P. (1932). *J. Amer. med. Ass.*, **98**, 2269.
Miners' Nystagmus Committee: First Report, Med. Res. Cncl. Sp. Rep. Ser. No. 65, H.M.S.O., London, 1922. Second Report, ibid., No. 80, 1923. Third Report, ibid., No. 176, 1932.
Parsons, J. H. (1919). *Trans. ophthal. Soc.*, **39**, 269.
"Prevention of Blindness." Report by the Standing Committee on the Prevention of Blindness of the Union of Counties Associations for the Blind, London, 1936.
Resnick, L., and Carris, L. H. (1924). *Eye Hazards in Industrial Occupations*, National Committee for the Prevention of Blindness, Inc., New York.
Walker, S., jun., and Auten, H. L. (1941). *J. Amer. med. Ass.*, **116**, 1356.
"Welfare of the Blind in Various Countries." Report of the League of Nations Health Organization, Geneva, 1929.
Ziegler, S. (1921). *J. Amer. med. Ass.*, **77**, 1160.

HAEMOGLOBINOMETRY

BY

CLAUDE RIMINGTON, M.A., Ph.D., B.Sc.
National Institute for Medical Research, London

The need has recently become apparent for a rapid method for the determination, with sufficient accuracy for clinical purposes, of total blood pigment in samples of whole blood (cf. Campbell, 1941). Such determinations should include not only oxyhaemoglobin and reduced haemoglobin, but also the abnormal pigments methaemoglobin and sulphaemoglobin, which are at times encountered in patients such as those to whom sulphonamide drugs have been administered, and CO-haemoglobin. The method should be suitable for performance under conditions in which facilities are limited.

I have for some time past been using a method of total blood-pigment determination in which all haem pigments present are converted into pyridine-haemochromogen, and the intensity of absorption of the latter around 550 mμ is measured upon the Hilger-Nutting photometer. The results so obtained possess a high degree of accuracy, and have the added advantage that they may be referred to a pure crystalline chemical substance—haemin—by means of which the instrument is calibrated. This method is based upon the procedure described by Roets (1940) in South Africa, but the less refined technique which he describes still possesses its main advantages, and is suitable for clinical use in the circumstances outlined above.

I have lately received several independent inquiries concerning the pyridine-haemochromogen method, and the purpose of this note is briefly to set forth its principal features.

The methods available for the determination of haemoglobin may be classified as follows:

Type of Method	*Remarks*
1. Gasometric: O_2 or CO capacity	Precise, but requires specialized apparatus
2. Colorimetric: CO-haemoglobin	Rapid. Standard: stock CO-Hb solution. Requires source of coal-gas or CO
Acid haematin	Erratic. Standard: a coloured glass (Newcommer) or acid haematin from similar blood. Plasma constituents affect colour
Alkaline haematin	Less erratic than preceding. Standard: a similarly treated standardized blood
Cyanhaemoglobin, etc.	Colorimetric comparison with standards prepared from standardized stock blood
3. Mechanical aids	A variety of machines provided with coloured glass disks to correspond to concentrations of one or other Hb derivative
4. Chemical: Iron content	Precise but tedious. Assumes non-haemoglobin iron to be negligible
5. Spectrophotometric	Elaborate, requiring expensive and bulky apparatus
6. Pyridine-haemochromogen	Roets (1940) and present article. Rapid. Precise when using spectrophotometric apparatus. Suitable accuracy for clinical purposes when using hand spectroscope or colorimeter. Standard: pure crystalline haemin

It is not my intention further to discuss methods 1 to 4. Some general consideration may be given to the spectrophotometry of haemoglobin pigments.

When light passes through a solution of any substance which obeys Beer's law, and the depth of layer and incident

intensity remain constant, light absorption is proportional to the concentration. Greater sensitivity may be obtained by operating with monochromatic or nearly monochromatic light (obtained by coloured glass filters) of wavelength corresponding to the peak of an absorption band shown by the substance under examination.

With the advent in recent years of cheap photo-electric cells, various designs of photo-electric colorimeter have appeared, all operating on this principle. It is necessary, however, in order to use such instruments for quantitative determination, to calibrate them in terms of known concentrations of the substance to be measured, and, unfortunately, haemoglobin pure enough for such a purpose is obtainable only with the utmost difficulty. Alternatively, one can accept a figure in the literature for some function of pure haemoglobin, such as oxygen capacity, and on this basis analyse the solutions used for calibration, but such a procedure is obviously less satisfactory than one employing known amounts of a pure standard. By using crystalline haemin—a pure stable substance the structure of which is accurately known—as reference standard and converting it into pyridine-haemochromogen, instruments may be calibrated to measure the absorption in the region of 550 to 555 mμ, which embraces the peak of the very intense α band of the haemochromogen.

The advantages of utilizing the absorption band of a haemochromogen have been set forth by Dénes (1932) and Deutsch (1934), but in both the methods proposed by these authors globin-haemochromogen and not pyridine-haemochromogen was the substance produced. Pyridine-haemochromogen, as used in Roets's (1940) method, has also been employed for the determination of haematin in liver catalase by Zeile and Hellström (1930), Keilin and Hartree (1936), and Stern (1937), the last-named describing a simple adaptation of the hand spectroscope to form a spectrocolorimeter.

Method

A 1 in 500 dilution of blood in decinormal sodium hydroxide is made, using a standard or calibrated pipette. This dilution may, of course, be made in two steps, if it is preferred, as in the worked example quoted below. After a few minutes at room temperature a convenient volume, such as 10 c.cm., is measured into a small flask and one-fifth of the volume of pyridine is added. Upon mixing by gentle rotation the conversion of the haem pigments into the alkaline parahaematin is completed within a few seconds; hence there is no necessity to allow the original blood dilution to stand for 10, 20, or even 40 minutes before proceeding, or alternatively to heat in a boiling-water bath as is required when the alkaline-haematin method is used.

A pinch of good-quality sodium hydrosulphite ($Na_2S_2O_4$) is now added to the mixture, and the contents of the flask are swirled gently until the solid has dissolved. The immediate colour change to pink denotes the conversion of the pigments into pyridine-haemochromogen. Without undue delay (to guard against reoxidation) the solution is transferred to a photo-electric colorimeter cell and the light absorption in the region 550 to 555 mμ is measured, using a suitable filter (e.g., Ilford spectrum filter No. 605—yellow-green). From the calibration factor, obtained by using known weights of pure haemin instead of blood and proceeding as above, the haemoglobin content of the blood is then calculated.

Molecular weight of haemin, $C_{34}H_{32}O_4N_4FeCl = 651.4$

Iron content of haemoglobin = 0.334%

∴ Molecular weight of haemoglobin = 66,890

$$\frac{\text{Haemoglobin}}{\text{Haemin}} = \frac{66.890}{4 \times 651.4} = 25.66$$

Should it be contended that the error involved in calculating the molecular weight of haemoglobin from its iron content is undesirably large, the results might alternatively be expressed in terms of haemin or haematin. The extinction ε of pyridine-haemochromogen prepared from crystalline haemin and using a photo-electric absorptiometer with Ilford No. 605 filter and 1-cm. cell was found to be 0.108 at a concentration of 1 mg. per 100 c.cm.*

Should no photo-electric colorimeter be available, the concentration of the pyridine-haemochromogen solution may be determined by one of the alternative methods, such as colour comparison in a colorimeter with a standard prepared from haemin (standard solutions of haemin in alkali should be kept in the dark) or dilution while viewing with a hand spectroscope until the intensity of the α absorption band matches that of a standard, as described by Roets (1940). This last method is certainly the most simple and rapid, although not quite so accurate as the use of a colorimeter. Pure haemin is easily prepared according to Gattermann (1937), but should be recrystallized as follows:

> 5 grammes of haemin is dissolved in 15 c.cm. of pyridine, and 40 c.cm. of chloroform is added. The solution is passed through a No. 3 or No. 4 sintered-glass filter to remove any protein and is run into a mixture of 250 c.cm. acetic acid + 5 c.cm. saturated NaCl + 4 c.cm. concentrated HCl, which is maintained at water-bath temperature. After cooling to room temperature the crystals are filtered and washed successively with 50% acetic acid, water, alcohol, and ether, and then dried.

I have used the pyridine-haemochromogen method with equal success for specimens of plasma and urine containing haemoglobin, myohaemoglobin, or mixtures of these with their derivatives. It is only necessary to adjust the initial dilution so that the concentration of pigment in the final solution falls within the comfortable range for measurement.

Example.—1 c.cm. of blood was diluted to 100 c.cm. with decinormal sodium hydroxide. To 1 c.cm. of this solution was added 3 c.cm. of the alkali, then 1 c.cm. of pyridine and, after mixing, a pinch of sodium hydrosulphite. In a 1-cm. cell the reading on the Hilger-Nutting photometer at 552 mμ was 0.573. The calibration for this instrument had been found to be 0.62. Hence:

$$\text{Hb per c.cm. of blood} = 0.573 \times 0.62 \times 500 = 177.6 \text{ mg. per c.cm.}$$

i.e., 17.76%

The same result was obtained whether the determination was completed within five minutes or after allowing the mixture with alkali to stand for one hour and that with pyridine for a further half an hour.

REFERENCES

Campbell, R. D. (1941). *British Medical Journal*, **2**, 747.

Dénes, A. (1932). *Biochem. Z.*, **255**, 378.

Deutsch, B. (1934). Ibid., **274**, 299.

Gattermann, L. (1937). *Laboratory Methods of Organic Chemistry*, p. 407. Macmillan, London.

Keilin, D., and Hartree, E. F. (1936). *Proc. roy. Soc.*, B, **121**, 173.

Roets, G. C. S. (1940). *Onderstepoort J. vet. Sci. Animal Ind.*, **14**, 451.

Stern, K. G. (1937). *J. biol. Chem.*, **121**, 561.

Zeile, K., and Hellström, H. (1930). *Z. physiol. Chem.*, **192**, 171.

* This figure was kindly determined for me by Dr. C. J. O. Morris, to whom my thanks are due. Two specimens of haemin were used, the one prepared by me from ox blood, the other by the late Sir Patrick Laidlaw from sheep's blood, and the values obtained were found to differ by less than 1%. Dr. Morris has used the pyridine-haemochromogen method for the determination of haemoglobin in more than 100 samples of blood and has found the method to be eminently satisfactory.

The Ministry of Health announces (Circular 2549) that it has been arranged for persons undergoing vocational training at the Ministry of Labour's centres to be referred, where necessary, to hospitals in the Emergency Hospital Scheme for a specialist's opinion as to (*a*) their physical suitability for the training or (*b*) any possible harmful effect and the advisability of modifying or even discontinuing the training. Where the hospital staff are remunerated on the "occupied-bed" basis these cases will be treated in the same way as Service cases. Attendance at the hospital, whether for examination or out-patient treatment, is to be, so far as possible, at a stated date and time for each case. Patients will contribute towards the cost of maintenance and treatment in hospital unless the latter is for a war or war service injury. Medical officers are to be appointed to the training centres, and reference to E.M.S. hospitals will normally be made by them.

MENTAL SYMPTOMS IN CEREBROSPINAL MENINGITIS

BY

T. W. H. WEIR, M.D., D.P.H., D.P.M.

Medical Inspector, Ministry of Home Affairs, N. Ireland

AND

C. K. VAUTIER, M.B., M.R.C.P.

Assistant Medical Officer, Mental Hospital, Carmarthen

During the winter months of 1940-1 three male patients were admitted to this hospital suffering from abnormal mental symptoms which were subsequently found to be due to cerebrospinal meningitis. All these cases were certified before admission. Present wartime conditions, with evacuation, expanding war production, and the congregation in schools and halls of large parties of men and women engaged in civil defence (Underwood, 1940), have given rise to circumstances which are apt to encourage the development of infectious diseases. Among these occurs cerebrospinal fever, a disease whose spread by carriers is notoriously associated with overcrowding. Now, the following three cases have a direct association with the wartime effort, and a description of them may prove of interest and perhaps of assistance to those in charge of the health and welfare of people living under such conditions, and be a guide to the best means of dealing with them.

Case I

A man aged 29. Employed as a labourer at War Office construction works. Slept in hut with other workers. Heavy drinker for several weeks prior to onset of illness. Noticed to be restless and excited two days before admission. Became more restless, confused, violent, and abusive. Regarded by fellow-workmen as suffering from alcoholic excitement. The doctor called in reported him as being restless and abusive, unable to recognize friends who were attempting to pacify him. Patient was certified and sent to the mental hospital. No history of cases of cerebrospinal fever in area where patient worked.

Admitted to this hospital October 30, 1940. Well-developed patient. Mental state confused; restless, violent, and abusive. Resisted examination strongly. Axillary temperature and pulse rate normal. No neurological abnormality observed, nor was any rash present. Shortly after admission given morphine and hyoscine; became quieter and slept for a few hours. On October 31, pulse 120, temperature 101.6° F.; delirium more marked; was fairly quiet with sedatives.

November 1.—Pulse 110, temperature 101.4° F. Restless and irritable. Patient noticed to be lying on side with head slightly drawn backwards. Neck rigidity present, with positive Kernig's sign. Brudzinski's sign was also elicited. A lumbar puncture was done, and showed the cerebrospinal fluid to be under pressure and opalescent. A slide smear and subsequent cultural growth revealed meningococci. Treatment with sulphapyridine begun. Patient made no complaint of headache. Dosage was as follows: 3 grammes of sulphapyridine orally at once; after six hours 2 grammes given four-hourly for twenty-four hours, followed by 1½ grammes four-hourly for twenty-four hours; subsequently 1 gramme given three times daily. On the twelfth day the dose was reduced to 2 grammes daily for three days, and then discontinued. The total amount of the drug given was 54 grammes. Except for initial cyanosis no other untoward symptom was observed.

Progress.—During second and third days remained delirious, with moderate degree of cyanosis. Able to swallow fluids well. On November 4 less confused, but still restless, able to answer questions slowly. Temperature 102.2° F. Slight headache.

November 8: Temperature normal; improvement continues; much clearer mentally, with rational response; some neck rigidity still present.

November 23: Progress continues to be satisfactory; rigidity completely gone; mentally normal; weak physically; allowed up for short time.

January 17, 1941: Physical condition now normal; mental state normal; to-day discharged from hospital as recovered. A post-nasal swab examined on December 31, 1940, showed no meningococci.

Case II

A man aged 52. Employed as ordinary seaman on coastal steamer. Had been taking alcohol. Captain of steamer stated that at 6 a.m. on November 10, 1940, one of the seamen reported that patient was ill and had been restless all night. Two hours afterwards mate went ashore for doctor. Patient was restless, throwing the bedclothes about; could not answer questions. Doctor reported that he behaved strangely, was unable to understand or answer questions put to him, and must be removed as unfit to travel at sea with his vessel; he regarded patient as suffering from delirium tremens.

Admitted to this hospital in evening of November 10. A heavily built man in state of muttering delirium. He was in a filthy state owing to general incontinence on way to hospital. Temperature subnormal; poor pulse. No stiffness of neck or any sign of rash. Restless night. Coma deeper in morning of the 11th. Cyanosed. Pulse poor. Temperature suddenly rose to 103° F. Slight degree of neck rigidity now present. Lumbar puncture performed. Cerebrospinal fluid opalescent; some blood. Slide smear showed numerous polymorphonuclear leucocytes, meningococci, and a few pneumococci. Treatment with sulphapyridine begun immediately.

Dosage and Progress.—2 grammes sulphapyridine intravenously, followed by 1 gramme six hours later. Rectal salines with 5% glucose and general stimulants used, but heart began to fail, with increased congestion of lungs. Patient died in early hours of following morning.

Necropsy.—Arachnoid thickening, especially over vertex of brain. Cerebrospinal fluid increased in quantity and opalescent. Thin pus in ventricles. Intense congestion of meninges and numerous petechial haemorrhages in white matter of brain. Some purulent lymph on under-surface of cerebellum. Signs of fracture of skull looked for since pneumococci present in cerebrospinal fluid, but nothing found. Lungs showed congestion. Heart enlarged; muscle pale and flabby.

Case III

A man aged 41. A labourer on Admiralty construction scheme. Living in own cottage with wife. Had been receiving attention at home for several days for "influenza." Nursed by wife. On morning of day of admission became extremely restless, getting out of bed, and wife was unable to manage him. Patient was therefore sent to the local Poor Law institution, whence he was transferred to this hospital. It was stated that he was violent and unmanageable, and that four firemen had to hold him down. He had been taking alcohol recently.

Admitted on March 3, 1941, as certified patient. Slight build. He was confused and irritable, and wanted to be left alone, lying curled up on his side in bed. Persisted in covering his head with the bedclothes, and resisted examination. Did not complain of any headache. It was noticed that he held his head stiffly and that he could not be made to put his chin on his chest, the neck muscles being rigid. Meningitis was thus suspected. Kernig's sign and Brudzinski's neck sign were present. Temperature 99° F.; pulse 80 and full. No rash observed. Lumbar puncture showed the cerebrospinal fluid under pressure and milky in appearance. A diagnosis of cerebrospinal meningitis was made and treatment with sulphapyridine immediately started. Subsequent slide smear and cultural growth showed meningococci in large numbers. 1 gramme sulphapyridine was given intramuscularly, followed by 3 grammes by mouth four-hourly for three doses; then 1 gramme four-hourly for forty-eight hours, followed by 1 gramme three times daily for five days; total amount 37 grammes.

Progress.—March 28: restless and irritable during first three days of treatment; able to respond, though reluctant to do so; took fluids well; temperature did not rise above 99° F.; visual hallucinations present; stated he could see policemen in the

room above him, and also insects crawling round the room. On April 2 was quite amenable; pleased when spoken to, with a polite response; temperature normal; some headache and stiffness of neck; eating and sleeping well; hallucinations disappeared, although remembers having them; herpes labialis present. April 9: temperature normal; mentally clear; allowed up for a short time; no noticeable neck rigidity. On April 28 the patient had completely recovered, and was discharged that day.

Incidence of Cerebrospinal Fever in Wartime

Wartime conditions are demanding an increased industrial output, shipping movements, and constructional undertakings. To fulfil these has meant the concentration of workers in numbers never previously contemplated and in areas where accommodation, more particularly at night, has often proved far from adequate. This has led to improvised billets, which vary from wooden dormitory huts to commandeered mansions in which very often some degree of overcrowding exists, with poor ventilation and insufficient sanitary facilities. It is not unnatural to expect that diseases encouraged by such unsatisfactory conditions should increase in incidence. This has been found so, and among such diseases cerebrospinal fever has figured prominently. This disease has for a long time been associated with the camp and barrack environments of military life. Since the beginning of the present war its occurrence has shown a decided increase, as conditions in the early days of general mobilization, with the difficulty of obtaining suitable accommodation, proved a fruitful field for its development. The disease is not, however, confined to active service personnel, but can occur among civilians if they are gathered together under like conditions. It will be noticed that the three cases above are those of civilians who have been working in Admiralty, War Office, and Merchant Service employment.

These cases have been the first of this form of illness to be admitted to this hospital. Each presented superficially a picture of the class of mental illness known as confusional psychosis. In this state the patient appears confused and muddled, does not know where he is or recognize those around him, and talks in a rambling incoherent fashion. Added to this there is usually present a varying degree of restlessness and excitement which may be accompanied by outbursts of violence.

Development and Course of the Illness

Now a number of the patients admitted to mental hospitals are suffering from this form of mental illness, and in them no clearly defined organic disease can be found. It is a confusional state without an organic basis. On the other hand, it is well recognized that this mental picture may arise in the course of acute illnesses of known origin, especially if a prolonged rise of temperature is present. This is well seen in pneumonia and typhoid after the first week, the condition being more usually termed delirium. Exogenous poisons, as alcohol and opium, will produce the state. It is found in puerperal cases. It may accompany diseases of special organs, as the kidney and brain. In this last instance the pathological state may be tumour, or inflammation of the brain substance or the meninges as in the present cases. Here the mental symptoms have an organic basis; they constitute one of the complications of the disease. Cushing (1940), reporting on 124 cases of cerebrospinal fever, noted that 2 patients were very violent and required constant restraint, 4 were noisy, 13 rambling and delirious, 10 irrational and disorientated. Medical officers of mental hospitals at some time in their experience have had to admit cases regarded as suffering from a purely mental disturbance which have turned out to be instances of organic disease, the mental symptoms being only secondary. The development and course of the illness are such that the mental symptoms, though really secondary to the main illness, overshadow the true condition, the real nature of the illness being overlooked. In certain cases the cause is recognized, but the mental state is so acute as to prevent the patient being nursed in a general hospital. As previously mentioned, the predominant symptoms most often take the form of confusion, with muttering rambling talk, disorientation, and varying degrees of restlessness and excitement even to the extent of violence. The last two symptoms give most worry to those called in to see such patients. These symptoms are of such immediate urgency that a more detailed examination for a possible physical cause is omitted; the patient is considered to be a danger to himself and perhaps to others, so is sent to the place best adapted for the care of such patients—the mental hospital.

In all three cases reported the mental symptoms held the picture during the onset of the illness. In Cases I and II these developed suddenly without any previous complaint of ill-health and were the first indication of something seriously wrong. Patient No. III had not been feeling well for several days and thought he had "influenza." In him, also, the mental symptoms appeared suddenly. They were chiefly confusion, disorientation, restlessness, and general resistiveness with violent outbursts. Irritability was pronounced. Patients resented any nursing attention and wanted to be left undisturbed. Hallucinations, not usually present, occurred in one case. Photophobia was present. There was a considerable degree of hypersensitiveness and rigidity of back muscles, best seen during lumbar puncture. There was a history of alcoholism in each case. In Cases I and II the doctor in attendance had made a tentative diagnosis of delirium tremens. Case III during the second and third days of illness developed vivid visual hallucinations resembling those found in delirium tremens. These were not present before admission. One wonders if the consumption of alcohol caused a lowering of resistance to the meningococcus, which was most likely harbouring in the nasopharynx of carriers in the vicinity. Alcohol itself can cause acute mental symptoms resembling those found in the present cases, and would of course tend to make a correct diagnosis more difficult. Meningitis was suspected in all cases on finding some degree of neck rigidity and commencing head retraction. The best way to demonstrate this was to try to bend the patient's head forward so as to put the chin on the chest. Kernig's sign and Brudzinski's neck sign were easily elicited. In Cases I and II these signs were not obtained on admission, although the mental symptoms were marked. In Case III the signs were observed on admission. It would appear that mental symptoms may be present for a time before definite signs of meningeal irritation can be elicited. In spite of this, neck rigidity is one of the earliest signs of meningeal trouble. Headache was not complained of at all in the early stage of the illness; it only appeared to a mild extent as the patient's mental state improved. If there is any doubt as to the possibility of meningitis, a lumbar puncture should be done, and this will help to make clear the nature of the illness. The temperature in cerebrospinal fever is of little help in estimating the severity of the illness. The highest temperature in Case I was 101.6°F., settling in a few days. In Case II the temperature rose suddenly as a terminal phenomenon. Case III did not show a temperature above 99°F. It would seem that temperature-taking will not always exclude a serious illness. The pulse rate showed little of note. No rashes were observed, nor did any paralysis appear. Herpes labialis was present in Case III.

Cerebrospinal meningitis often occurs in epidemic form, but is more usually sporadic. Underwood, reviewing a recent outbreak, states that it is very widespread, and there is no county in England and Wales which has not had at least one case. This statement is important, as it affirms that cases can crop up in any district without other active cases being present. This point is borne out in our cases, for, so far as is known up to date, no others had occurred previously, or have arisen since, in the area from which each patient came. Medical officers in charge of the health of workers in large industrial concerns or war undertakings of any sort have a special responsibility in this matter, for it is among such people that the disease is apt to occur, and quite often without any warning. So in any case where sudden mental symptoms develop the possibility of cerebrospinal meningitis should be kept in mind.

Mental Hospitals and Cases of Meningitis

It is the duty of mental hospitals to receive patients suffering from confused mental states as well as from any other form of mental illness, whether the condition be due to known, unknown, or overlooked causes. We may, therefore, draw attention to what is now regarded as the most satisfactory procedure for the admission of such cases. The recovery rate for this type of acute mental illness is high. If the mental state is directly due to an organic illness, and the latter is curable, the mental state will clear up in most instances on recovery from the primary illness. But even where no definite cause can be found the outlook is reasonably good. So there is a distinct hope that these types of case will recover within six months or, at most, a year. Previous to the Mental Treatment Act, 1930, the only means of admitting these patients was by some form of certification with a magistrate's order. This was realized to be a hardship to such recoverable cases, and thus the procedure of admission as a temporary patient was introduced. Here no magistrate's order is needed. All that is required is:

1. A recommendation from each of two medical practitioners, one of whom must be approved by the Board of Control for the purpose of making recommendations. There are such approved doctors in every district. These recommend that the patient be received into the mental hospital for a period not longer than six months, stating that he is likely to benefit by such a period of treatment. Some particulars of the patient's mental state are also required.
2. An application made by a relative or a relieving officer.
3. Statement of particulars as to name, age, etc.

At the end of the six months, and should the patient not have yet recovered, a three-months extension can be authorized by the Board of Control, with a further three months if necessary. If recovery has not taken place at the end of twelve months the patient will either have to be discharged, or be certified in the ordinary way if further detention is necessary. Occasionally it is found that the patient is willing to remain on as a voluntary patient. It may be noted that patients best suited to be dealt with as temporary inmates are those who, through disturbance of their mental functions, are not able to come to decisions themselves: they lack volition; they are confused. Once the mental faculties are restored the patient can then express his own desires; he does not need to be detained any longer. If this method of admission is used in all cases of acute confusion, then even should the case subsequently turn out to be cerebrospinal fever or any other organic illness with mental symptoms there is the satisfaction, on recovery of the patient, that certification has not been resorted to.

Once again these cases show the satisfactory results obtained by the use of sulphapyridine in cerebrospinal meningitis. Previously this disease was a source of worry as to an ultimate recovery. Before serum treatment was employed the mortality rate was as high at 70 to 80%; now with sulphapyridine, as seen in 200 cases treated by Harries (1940) with this drug, the mortality rate was 11%, the cases being of all degrees of severity. Cases I and III were typical cases, with complete recovery. The difference in amounts of the drug required in the two cases was most probably due to treatment having started earlier in Case III than in Case I. Case II was too far advanced on admission, and the mixed infection made the outlook hopeless. There were no complications that could be attributed to the sulphapyridine medication.

Summary

Three cases have been described which were sent as certified patients to a mental hospital with acute mental symptoms of confusion and excitement. The patients were subsequently found to be suffering from cerebrospinal meningitis.

It is recommended that medical officers in charge of the health of workers who are collected together in large numbers keep in mind the possibility of cerebrospinal meningitis being the cause when sudden acute mental symptoms arise in any of the personnel, especially when the symptoms take the form of confusion, restlessness, and excitement.

All cases of acute confusional psychosis should be sent to the mental hospital as temporary patients only.

We wish to express our thanks to Dr. Sidney Davies, medical superintendent, for his helpful criticism in the preparation of this paper and for permission to publish the cases.

REFERENCES

Cushing, R. W. (1940). *British Medical Journal*, **2**, 439.
Harries, G. E. (1940). *Proc. roy. Soc. Med.*, **33**, 560.
Underwood, E. A. (1940). *British Medical Journal*, **1**, 757.

EXPERIENCE WITH THE WILSON AND BLAIR MEDIUM FOR B. DYSENTERIAE (FLEXNER)

BY

D. B. BRADSHAW, M.B., D.P.H.Dubl.

Deputy M.O.H., South Shields County Borough

At the time of publication by Wilson and Blair (1941) of their new media for the Flexner group an outbreak of this type of dysentery was in progress in a Yorkshire town. One of the new media was immediately put on trial, with the results here stated. Though small, the figures are worth recording because opportunities to test such a medium under working conditions in this country are few and because the results were unequivocal.

The material was from cases admitted from a general hospital, in which infection first appeared in a children's ward and subsequently spread to a female ward. There were several cases among the nursing staff and several positive stools among clinically uninfected contacts. A few cases were admitted from the general population and from a second hospital. It is probable that the infection was widespread in the town, cases being missed owing to their mildness. This mildness was a remarkable feature of the outbreak. Initially the cases showed typical dysenteric stools, liquid, with much bloody mucus and often no faecal material. Constitutional disturbance was, however, not pronounced, and many cases had clinically cleared up in thirty-six hours. In the first thirty cases there was only one death—that of a senile patient.

All strains of the organism gave acid in glucose and mannite; no change in lactose; indole+. A few strains were inoculated into dulcite, but they produced no change. All agglutinated strongly with Flexner polyvalent serum I

(Oxford Standards Laboratory)—that is, they were type V, W, X, or Z—but pressure of work prevented more detailed identification.

The MacConkey agar in use at the laboratory gave a high proportion of positive plates in early cases, when a fragment of blood-stained mucus was plated after repeated washing; but results in convalescents, though occasionally positive, were evidently unreliable. The first of the media described by Wilson and Blair (the tellurite - iron citrate - neutral red medium) was brought into use within a few days of the publication of their paper, one plate of Wilson and Blair's medium and one of MacConkey's agar being used for each specimen. The results are shown in the table.

Table of Results with Blair and Wilson's Medium and those with MacConkey's Agar

Case No.	Acute or Convalescent	No. of Flexner Colonies		Remarks
		MacConkey Plate	Wilson–Blair Plate	
240	A	1	1	
246	A	+	+	
259	C	Neg.	+	
262	C	,,	+	
267	A	20	Uncountable	Pure culture of Flexner on Wilson–Blair plate
271	C	10	,,	
272	C	2	10	
275	A	Neg.	Uncountable	Pure culture of Flexner on Wilson–Blair plate
284	A	,,	,,	
285	A	Uncountable	,,	Little to choose between the two media
298	C	Neg.	,,	
300	C	,,	,,	
341	C	9	Neg.	
342	C	1	,,	
343	C	9	100	
353	C	1	30	
372	C	Neg.	Uncountable	Pure culture of Flexner on Wilson–Blair plate
383	C	,,	30	,, ,, ,,
384	C	,,	100	,, ,, ,,
392	C	,,	10	

Positive on both media : 8
,, ,, Wilson and Blair's medium only : 10
,, ,, MacConkey agar only : 2
Total positive on Wilson and Blair's medium : 18 (90%)
,, ,, ,, MacConkey's agar : 10 (50%)

It will be noted that of the 20 consecutive stools from which Flexner dysentery bacilli were isolated 8 were positive on both media, 2 on MacConkey agar only, and 10 on the Wilson - Blair medium only—i.e., 50% of the positive stools would have been missed had only MacConkey's agar been used. Of 46 consecutive negative stools, the Wilson - Blair plate was in one case spoilt; 22 of the remaining 45 were either sterile or showed only minute colonies of *Streptococcus faecalis*. The corresponding MacConkey plates often showed non-lactose-fermenting colonies which required subculture and inoculation of sugars for identification. Thus the Wilson - Blair medium will sometimes have an advantage of two or three days in speed of reporting a negative result, a useful point when many convalescents are being dealt with. On the other hand, this high selectivity must be kept in mind, lest other pathogens be missed, as the following shows:

After some 20 consecutive cases of Flexner dysentery had occurred the stools of certain ward contacts (clinically uninfected) were examined. From one of these Sonne dysentery bacilli were isolated; this patient was presumably a carrier. Later a single case of Sonne dysentery occurred in the same ward. The Wilson - Blair plates from both these patients were of course negative.

From one batch of medium both bile salt and lactose were omitted in error. This batch appeared to give equally good results, but would probably prove unreliable on more extended trial. As Wilson and Blair point out, the medium, after the addition of tellurite, is very sensitive to heat. Neglect of this point leads to loss of selectivity.

The weight of inoculum which the medium will stand is surprising. Apart from *Str. faecalis*, which causes no trouble, and an occasional strain of *B. coli*, little except Flexner's dysentery bacilli will grow upon the medium. Using one or two large loopfuls of heavy faecal suspension or preferably of washed mucus, 27 out of 65 consecutive plates showed no growth of unwanted organisms, the plates being either pure cultures of Flexner's dysentery bacilli or sterile (neglecting the minute colonies of *Str. faecalis*). The growth of Flexner dysentery bacilli is neither inhibited nor enhanced, since subcultures on Wilson and Blair's medium and on MacConkey's agar give equal growth. The heavier growth of Flexner dysentery bacilli on the primary plates is due entirely to the heavy inoculum possible on this medium.

Summary

One of the new media described by Wilson and Blair for the Flexner group has been used in an outbreak of this type of dysentery. The results confirm the value of this medium.

My thanks are due to Dr. J. M. Gibson for permission to publish these notes, and to Dr. Honoria Twomey for much practical help.

REFERENCE

Wilson, W. J., and Blair, E. M. McV. (1941). *British Medical Journal*, **2**, 501.

CAROTID CAVERNOUS ANEURYSM WITH FISTULA

BY

W. J. ROCHE, M.D., M.Ch.,
D.O., D.O.M.S., D.L.O.

The following case of carotid cavernous aneurysm may be of interest. I saw the patient at the ophthalmic department of a county hospital and later with my colleague Mr. Rupert Parry at Cardiff Royal Infirmary; she was subsequently transferred from the ophthalmic department to the surgical unit under Prof. Lambert Rogers.

Report of Case

History.—Ten days before I saw her in November, 1937, she was awakened by a violent fit of sneezing. Immediately afterwards there was a great strain over her right eye and a hissing noise in the right side of her head which synchronized with the pulse. Her vision gradually depreciated. Two days after sneezing she developed diplopia; her vision with a +1 D sphere was: right 6/24, left 6/18. The pupil on the right side reacted sluggishly and there was paresis of the right external rectus; the fundi were normal. There was a history of antispecific treatment; her Wassermann and Khan reactions were negative, and the systolic blood pressure 190 mm. Radiographs of the skull were negative with the exception of deep meningeal grooves. At Christmas-time she developed total ophthalmoplegia in the right eye, with marked exophthalmos, ptosis, and chemosis; her vision was reduced to 6/60 in this eye. She was given potassium iodide internally, and towards the middle of January, 1938, the exophthalmos diminished somewhat; there were slight movements in the upper lid, and she could look up and in to some extent; the chemosis had lessened, but the large conjunctival veins were very varicose and engorged. Towards the end of January there was ptosis of the left eye, slight chemosis, and diminished eye movements; vision was 6/36 with correction, the fundus normal, and the field of vision full. Total ophthalmoplegia soon followed, with marked exophthalmos and chemosis. There was a recurrence of similar signs in the right eye, but the congestion in the conjunctival veins was more pronounced. There was some surgical emphysema on the right side of the forehead, and the noise in the head seemed to be over the right eye. When a stethoscope was applied to the skull a loud whirring bruit could be heard beneath the right side of the

frontal bone. Compression of the right common carotid artery caused the bruit to disappear, and with it the sensation of noise in the head. There was no sensory change in the trigeminal field. The patient's appearance was as in Figs. 1 and 2.

FIG. 1.

FIG. 2.

At no time was pulsating exophthalmos present; the only fundus abnormality was dilated retinal veins. Fortunately in this case compression of the internal carotid artery did not provoke faintness or giddiness, so, according to Matas's test, operation for ligature of the internal carotid could be undertaken without undue concern.

Operation.—This was performed by Prof. Lambert Rogers on March 29, 1938. At this stage the patient was practically blind in both eyes. Under local anaesthesia the confluence of the three carotid arteries was exposed on the right side of the neck. The internal carotid was noticed to be larger than normal, approximating in size to the common carotid. The internal and external carotid arteries were ligated with silk; the buzzing ceased, and no untoward symptoms were noted. The wound was closed.

Progress.—Six hours later the patient was conscious and able to use both upper limbs. The buzzing in the head had ceased. On the following day she became drowsy, slow in speech, and incontinent of urine; the pupils reacted sluggishly, but the chemosis was less and the exophthalmos had diminished. Left facial weakness was now noted, and left monoplegia. The right plantar reflex was flexor and the left extensor in type. Later in the day the left leg was paralysed. She was now hemiplegic and stuporous. Recovery then gradually took place, and despite some residual hemiplegia she expressed herself well pleased with the result of the operation, since she could now see and the buzzing in her head had ceased. It had previously been most distressing, and had kept her awake at night. Five weeks after the ligation her appearance was as shown in Fig. 3.

FIG. 3.

FIG. 4.

In May, 1938, her vision was: right 6/6, left 6/6; the only abnormalities were a very slight exophthalmos in the right eye and dilated conjunctival veins. I still see her at intervals. There is no change in her eye condition and little change in her hemiplegic condition; she does her housework and goes for long walks. Fig. 4 is a recent photograph.

Probable Pathological Condition

The pathological condition present in this case can only be surmised from the signs and symptoms which were present in the 31 cases mentioned in the literature on this subject in which necropsies were performed. Charcot established the fact that in no part of its course is the internal carotid so thin-walled as in its passage through the cavernous sinus. This portion of it has little support; it is surrounded by the cavernous venous channel, and is consequently liable to aneurysmal development. In this case I will presume that the aneurysm was on the point of bursting; the patient sneezed violently, and the aneurysm burst into the cavernous sinus, the resulting carotid fistula accounting for the immediate pulsating noise in the head. The cavernous sinus dilated because of the consequent arterial pressure within the venous sinus. There was damming up of the venous blood return from the right eye, with consequent exophthalmos. The enlarged cavernous sinus pushed forward the internal carotid artery and bent the optic nerve, with consequent loss of vision. The total ophthalmoplegia and ptosis were due to the kinking of the third, fourth, and sixth nerves in their passage through the dura, and to the direct pressure of the dilated sinus. The vicious back-pressure in the dilated sinus caused dilatation in the intercavernous sinus; then the left cavernous sinus dilated, and as a consequence there followed exophthalmos, ophthalmoplegia, ptosis, chemosis, and loss of vision in the left eye.

Immediately after the external and internal carotid arteries on the right side were ligated the head noise ceased, vision improved, and the other signs gradually disappeared, leaving no doubt that this was a case of right carotid cavernous arteriovenous fistula.

BIBLIOGRAPHY

Dandy, W. E., and Follis, R. H. (1941). *Amer. J. Ophthal.*, **24**, 365.
Matas, R. (1909). Keen's *Surgery*, **5**, 17.
—— (1911). *J. Amer. med. Ass.*, **56**, 233.
Parry, R., and Rogers, L. (1939). *Brit. J. Surg.*, **27**, 179. (An account of this case.)

Medical Memoranda

Thyroxine as a Practical Treatment of Myxoedema

It is well known that thyroxine is as effective as thyroid extract in the treatment of myxoedema. Nevertheless it is seldom used in practice, for it is more expensive than thyroid extract and is poorly absorbed when given by mouth. As thyroid extract could not be tolerated in the following case, injections of thyroxine were given. Our purpose is to describe a possible method of using thyroxine in such cases. Although we do not advocate its employment as a routine treatment of myxoedema, we think it worth recording that it is a practicable alternative.

CASE REPORT

The patient, a married woman aged 56, was first admitted to University College Hospital in August, 1938, having had diarrhoea and vomiting for four months. On admission she was found to be an obvious case of myxoedema, with a dry skin, thin hair, husky voice, and slow cerebration. Her basal metabolic rate was −53%, and while in hospital her pulse rate varied between 58 and 82. On three occasions thyroid extract was given by mouth, in doses varying from 0.5 grain twice daily to 1 grain three times daily, but each time the treatment had to be stopped owing to persistent vomiting.

She was readmitted to hospital in March, 1941, having had an attack of oedema affecting the upper part of her face, including the eyelids, after taking three tablets of thyroid extract. She also complained of pains in the arms, thighs, and calves. Her condition was about the same as it had been when she was first seen, but she had put on a stone in weight. The basal metabolic rate was −49%.

Intravenous injections of thyroxine were started after the patient had been in hospital two weeks, during which time her pulse rate varied between 56 and 64. At the first injection 1 mg. of thyroxine was given. As this had no ill effect the dose was increased to 3 mg. the following day and to 5 mg. a week later. There was no reaction following this larger dose. Three days later the basal metabolic rate was found to be −13%. The basal metabolic rate was estimated at weekly intervals, and three weeks after the last injection it had fallen to −30%. 7.5 mg. of thyroxine was then given, and a week later the basal metabolic rate was −1%. It fell steadily during the subsequent three weeks and again reached −30%. The next injection was increased to 10 mg. of thyroxine, but the following day the patient complained of pains in all her limbs, palpitations, and diarrhoea. These symptoms lasted from two to three days. It was considered that 10 mg. was too large a dose, and she has since been given 7.5 mg. at four-weekly intervals. During the first four weeks of treatment her weight fell from 9 stone to 8 stone, at which it has remained fairly steady. Her pulse rate was running between 70 and 80 when she was discharged from hospital in July. Since then she has been attending as an out-patient every four weeks for an injection. When last seen her condition was satisfactory. She is active at home and is much more lively than she was, her skin is of normal texture, and she has a quantity of new hair. She feels well, and seems unaffected by the fluctuations in her basal metabolic rate.

COMMENTARY

Why this patient was intolerant of oral thyroid extract but not of injections of thyroxine is not clear. However, our purpose is less to describe the case than the method of treatment. It will be seen that the technique employed was to find out the highest single dose of thyroxine that could be given without ill effect, with the object of spacing the injections so far as was possible. This was found to be 7.5 mg. If the daily utilization in a myxoedematous person is taken to be a little less than 0.3 mg. (Salter, 1940), this dose should last four weeks; weekly determinations of the basal metabolic rate showed that this was in fact the case. The treatment was entirely satisfactory from the patient's point of view, and can be recommended as a suitable method of using thyroxine when thyroid extract cannot be taken by mouth.

W. R. TROTTER, B.M., M.R.C.P.
NOEL WALLACE, M.B., B.S.
University College Hospital, London.

REFERENCE

Salter, W. T. (1940). *The Endocrine Function of Iodine*, p. 107. Harvard University Press.

Amoebic Liver Abscess in Northern Ireland

Amoebic liver abscess in Europeans is uncommon nowadays, even in the Tropics. Before the last war it was the commonest cause of death among British troops serving in India. Since the recognition by Leonard Rogers of the pre-abscess stage of amoebic hepatitis and the introduction by him of the emetine treatment of amoebiasis, it has lost its terrors and has become comparatively rare. The case of a soldier serving in Northern Ireland seems worth recording, especially on account of the long interval of perfect health since serving abroad and the complete absence of any history of amoebic infection.

CASE REPORT

The patient, a Regular soldier aged 29, had a history of uninterrupted good health before entering the Army and during his Army service until the middle of February, 1941. He went abroad in December, 1935, served one month in Cairo and eight months under canvas at Mersa Matruh. He returned to Cairo for one month and came back to England. This was the only time he had ever been abroad. His health had always been excellent, and he played football, swam, and rode a motorcycle regularly. He had never suffered from dysentery of any kind, nor had there ever been any clinical or bacteriological evidence of amoebic infection. He drank a moderate quantity of beer, but rarely took spirits. During the latter half of February he was laid up in his lodgings, in a village in Northern Ireland, with an attack of influenza. After a week's leave he rejoined his unit but never recovered his strength or his appetite, and he gradually lost weight.

He was admitted to a military hospital on April 13, with pain in the upper abdomen, pyrexia, and slight enlargement of the liver. He rapidly lost weight, the pyrexia persisted, and the liver continued to enlarge. On May 25 he was transferred to my hospital. He was then gravely ill, very emaciated, and had a dry furred tongue; his complexion was dark brown. The

Antero-posterior and lateral views, showing right dome of diaphragm very high. A large cavity, with scalloped walls and fluid level, is demonstrated in the right lobe of the liver. There is a hydropneumothorax with a fluid level on the right side, and the upper lobe of the right lung is partially collapsed.

temperature was 100°, pulse 110, and respirations 28. The liver was enlarged to near the umbilicus and was soft and tender. Liver dullness extended upwards to the nipple level. Breath sounds at the right base were feeble, but there were no adventitious sounds. Over the intercostal spaces neither tenderness nor oedema was present, but there was definite tenderness

in the left lumbar region posteriorly. The urine contained no abnormal constituent, and the stools were normal. Van den Bergh reactions were negative. The blood sedimentation rate was 31 mm. during one hour. Blood examination showed 23,000 white cells, with the following differential count: polymorphonuclear neutrophils 72%, eosinophils 1%, basophils 1%, large mononuclears 8%, lymphocytes 17.5%. *X*-ray examination revealed an elevated and fixed diaphragm on the right side.

A diagnosis of amoebic liver abscess was made, and injections of emetine, 1 grain daily, and large quantities of concentrated glucose were given. On May 26 the abscess was aspirated and about 24 oz. of pus evacuated, only local anaesthesia being used. His condition remained grave for a day or two, and he developed a serous effusion in the right pleural cavity. Aspiration of the liver was repeated on three subsequent occasions, the total amount of pus removed being 129 oz. Ten ounces of clear serous fluid was also taken from the pleural cavity. The liver pus was of the typical anchovy-sauce variety. Pathological examinations showed a few red cells and pus cells with large quantities of broken-down liver detritus. No amoebae were found.

At the beginning of August the patient was fully convalescent; he had an excellent appetite, and was taking plenty of exercise. His complexion had cleared to a healthy pink, there was no pain or fever, and he was rapidly putting on weight. His liver had returned to normal size. Altogether he received 30 grains of emetine, and no ill effects had been felt or observed. Later he went on leave and has since returned to his unit.

COMMENTARY

When the patient was admitted his appearance and the clinical examination suggested the diagnosis at once. His condition was, however, desperately bad, and as he had travelled a long way it was decided to keep him on emetine for a few days. The diagnosis was confirmed by the radiological appearances and by the characteristic white blood cell count. This latter gave a total leucocytosis of 23,000, with no increase of the polyneutrophils—in fact, all the white cells were in their normal relative proportions—thus presenting a characteristic blood picture. Aspiration, the method so strongly recommended by Rogers, was done with a Potain apparatus. There seems to be no justification for open operation in abscess of the right lobe unless aspiration fails, which is very rarely the case.

The majority of amoebic abscesses are in the right lobe, nearer the upper surface than the lower, and nearer the posterior surface than the anterior. When there is no pointing, therefore, the usual site for inserting the trocar will be about the eighth or ninth interspace in the posterior axillary line. If pus is not obtained at once the trocar must be withdrawn and passed in different directions. A large-size Potain trocar should be used and the pus evacuated into an exhausted bottle. If the pus begins to be mixed with fresh blood the trocar should be withdrawn and the procedure stopped. When most of the pus has been aspirated it sometimes gets thick and becomes difficult to remove. It is then useful to attach a stout metal syringe to the cannula and forcibly suck out the residual pus, watching for any sign of haemorrhage. Several aspirations may be necessary.

The first *x*-ray film showed a fixed right diaphragm and uniformly increased liver density. Later films demonstrated the abscess cavity very well and showed a fluid level. This fluid was due partly to pus and partly to serum that collected after aspiration. The cavity could be seen to be contracting down after each aspiration. The accompanying illustrations, taken after the first aspiration, show the great size of the abscess cavity and demonstrate how the liver substance can be reduced to a mere shell, with subsequent complete recovery.

I wish to express my thanks to Lieut.-Colonel Booth, D.S.O., and to those officers of his hospital staff who were concerned with the case in various ways. In particular I am indebted to Major Punshon for his excellent films, to Captain Johnston, whose unremitting care of the case so largely contributed to the satisfactory end-result, and to Sergeant Kaye for help with the illustrations.

JOHN D. SANDES, M.D., F.R.C.P.I.,
Lieut.-Colonel, R.A.M.C.

Reviews

COMMUNICABLE DISEASES

Handbook of Communicable Diseases. By Franklin H. Top, M.D., and collaborators. (Pp. 682; 73 text illustrations and 10 coloured plates. 37s. 6d. net.) London: Henry Kimpton. 1941.

This is a comprehensive though concisely written handbook based on the epidemiological and clinical experience obtained by the author and his predecessor, Prof. J. E. Gordon, in the Division of Communicable Diseases and Epidemiology, Herman Kiefer Hospital and Detroit Department of Health. The combination of hospital work and field epidemiology performed by the holder of this appointment as well as the greater scope of communicable diseases in the U.S.A. places the author at an advantage compared with corresponding workers in this country. His book is accordingly well balanced as between the preventive and clinical aspects of infectious disease. An unusual but valuable feature is the attention paid to nursing technique, two chapters being devoted to the management of communicable diseases in the home and in hospital, and, in addition, a detailed account of nursing care is given for each separate disease.

Among the best chapters are those contributed by various collaborators on pneumococcal pneumonia, leprosy, tuberculosis, syphilis, and gonorrhoea. It is a rare experience to read in a general book an account of leprosy which breathes of first-hand experience in every line. No fewer than 39 different diseases are described, including, in addition to the common infectious diseases, contagious skin diseases, encephalitis, lymphocytic choriomeningitis, psittacosis, amoebic dysentery, trichiniasis, undulant fever, hookworm disease, tetanus, tularaemia, malaria, rickettsial diseases, and rabies. It seems curious that glandular fever and Weil's disease should be omitted from this comprehensive list. In the description of the common infectious diseases the emphasis is naturally on those aspects which are most prominent in American practice. Scarlet fever, for example, is particularly well done, but the account of the clinical aspects of diphtheria is disappointingly meagre. The serum treatment of diphtheria is allotted fifteen lines, aspiration treatment only four lines (accompanied by an illustration of what seems a very inadequately powered suction pump), and tracheotomy ten lines. (One is rather frequently disappointed with this over-conciseness. The aerial transmission of smallpox is dismissed in a line. The whole of the complications of small-pox are polished off in eight lines, and encephalitis is not even mentioned. The chapter on whooping-cough is allotted only eight pages, while the same space is given to the common cold.)

Considerable emphasis is placed upon the risks of serum sensitivity, and an elaborate technique of sensitivity tests is advocated before embarking on serum treatment. Perhaps this is unavoidable in a country where such an exceedingly rare condition as the Arthus phenomenon was seen no fewer than four times among 21,443 cases of scarlet fever. Nevertheless the digest method of concentration of antitoxin, which can reduce serum sensitivity almost to vanishing point, is hardly accorded the importance which is its due. As might be expected, the account of poliomyelitis is excellent, but the possibility of infection by the alimentary route in this disease is not discussed except for a bare mention in the preface.

Excellent features are the references at the end of each chapter (an invaluable guide to American literature at least), the tables of final diagnosis, complications, and asso-

ciated conditions found in ten years' experience at the Herman Kiefer Hospital, the glossary, and the index. The format is a delight in these days. For all its 682 pages of excellent print on fine glossy white paper, and its weight of 3 lb., thickness in this book is a bare 1½ inches. The illustrations are mostly original photographs, and the ten coloured photographs (kodachromes) are a unique but probably expensive feature.

The book will be greatly appreciated by many in this country whose work is especially concerned with communicable diseases or infestations.

SURGERY FOR THE LAYMAN

A Surgeon Explains. By M. Benmosché, M.D. With diagrams by Bhola D. Panth. (Pp. 246. 16s.) London: Stanley Paul and Co., Ltd. 1941.

In *A Surgeon Explains* Dr. Benmosché, with the aid of line drawings of a diagrammatic character, aims at translating something of surgical anatomy, pathology, diagnosis, and treatment into non-technical language. His declared object is to satisfy the curious among the lay public, rather (as Dr. Howard Lilienthal tells us in a short foreword) in the manner of the newspaper articles of recent years, written for the information of the public. He writes: "The language is delightfully colloquial, and each subject, while not discussed in minute detail, presents enlightening information." Yet we may well ask how enlightening this information really is and, in any case, whether such enlightenment is desirable? In the first chapter, headed "Why this Book has been Written," the author endeavours to answer such questions and to justify the book on the ground that, "if left in the dark, the human mind can always manufacture much worse things than actually exist in Nature." The story of any operation, we are told, divides itself into three parts: the construction of the particular section of the body we are worried about, the warning signals the body sends out to tell us something has gone awry, and the surgical correction of the breakdown: and as we look at this three-sided picture we cannot resist an occasional glance over our shoulders at the past or a bold guess about the future. These glances at the past, even perhaps the guesses as to the future, are the best part of the book, but it is doubtful whether they justify it any more than the author's hope that it will help to dispel —through greater understanding—"that unnecessary and heartbreaking fear which surrounds the word 'operation.'" We may well ask, however, Are people really afraid of operations to-day because of any lack of knowledge of the technicalities involved? It is very doubtful whether this is so and whether the partial knowledge (because we cannot agree that Dr. Benmosché gives more than a smattering of real information to the layman) that may result from reading this book will allay his fear. Its sales will probably be large because man is ever curious about his health and things relating thereto, but on the whole there is much to be said for the point of view which leaves the worry to the practitioner and the surgeon—how about the possibility of that pulmonary embolism which is not discussed?—than to the patient himself. Where ignorance is bliss it is surely the height of folly to be only partially wise, and probably it is dangerous also. There must be more than a modicum of truth in the idea that a little learning is dangerous.

On the whole we do not advise the public to risk hypochondriasis and add to our difficulties in advising them by facing us with the little knowledge that they may acquire from this book. Except for the historical notes, which are brief, it cannot have any interest for the medically qualified. Admittedly it is an innovation and a worthy effort to enlighten the man in the street upon surgical matters, but we are not convinced of its justification. We suspect it may do more harm than good to that curiously gullible and altogether illogical being—the patient.

MANSON'S TROPICAL DISEASES

Manson's Tropical Diseases: A Manual of the Diseases of Warm Climates. Edited by Sir Philip Manson-Bahr, C.M.G., D.S.O., M.D., F.R.C.P. Eleventh edition, revised. (Pp. 1,083; with 18 colour plates, 15 half-tone plates, 364 figures in the text, 6 maps, and 28 charts. 35s. net.) London, Toronto, Melbourne, and Sydney: Cassell and Co., Ltd.

It was in 1898 that Manson's *Tropical Diseases* first made its appearance and quickly established itself as the reliable source of information on the particular branch of medicine with which it dealt. Subsequently other editions were produced by the original writer, Sir Patrick Manson, or, as in later years, by the present editor, who has not failed to follow in the footsteps of his great predecessor. Each succeeding edition revised and brought up to date by the editor has upheld what may be said to be a family tradition in presenting the latest information concerning tropical medicine within the compass of a book of convenient size. Readers of the latest, the eleventh, edition, will not be disappointed and will continue to find in the familiar and attractive form all that they may require for the practice of their profession in tropical lands. Compared with the tenth edition, published five years earlier in 1935, certain changes may be noticed, the most conspicuous of which is a section of two chapters dealing with life in the Tropics. Here are discussed the selection of Europeans for life in hot climates, acclimatization, the physiological effect of the Tropics, clothing, food, general hygiene, and certain diseases which, though not especially tropical in nature, occur and may be influenced or changed in character by residence in hot countries. This section will be of the greatest assistance to all those who are called upon to practise tropical medicine at home and abroad.

As the editor says in his preface, much ancient history has been removed from the book, and this has permitted of considerable changes in the sections on malaria, typhus, yellow fever, and other virus diseases which have been necessitated by the striking advances in knowledge which have occurred since the previous edition was published. The chapters on vitamin deficiency diseases, to which the editor himself has devoted years of special study, are particularly instructive. It is impossible to turn to any subject without discovering new information, a fact which speaks of the untiring industry with which the editor has carried out his self-appointed task. Certain new arrangements of a minor nature have been made, while new illustrations replace others which have been removed. The change made from one edition to another is one of the most striking features of the book. It is thus kept alive and prevented from becoming stereotyped. There is no doubt that the high standard is maintained and that Manson's *Tropical Diseases* remains the best guide for all those called upon to practise medicine in tropical countries.

Notes on Books

Dr. STANLEY COBB has renamed and brought up to date his previous small book, *A Preface to Nervous Disease*, and has given us an up-to-date summary of the physiology and pathology of the nervous system under the title *Foundations of Neuropsychiatry* (Baltimore: The Williams and Wilkins Company, $2.50. London: Baillière, Tindall and Cox, 14s.). He regards the study of psychology and psychiatry as logical extensions of these subjects, though admitting the extremely imperfect degree of our knowledge; but, unlike some neurologists, he freely admits the influence of purely psychic mechanisms in reshaping function and even structure. He has added recent advances in knowledge of the function of the hypothalamus,

thalamus, frontal cortex, and cerebral circulation, while his reconstituted chapter on epilepsy is an admirable presentation of present knowledge and opinions. Though in some respects sketchy, this book of modest dimensions is an excellent introduction to further reading.

The *Annual Charities Register and Digest* for 1942 has just been published by Longmans, Green and Co. for the Charity Organization Society. This is the forty-ninth edition of a useful reference book comprising a classified directory of charitable agencies in or available for the Metropolis. It contains about the same number of pages as in previous years and gives details of more than 2,700 institutions and societies. There are also chapters on the finance of social services, on special war organizations, and on agencies for aiding refugees. The C.O.S. carries on its valuable work in wartime just as in peacetime, and deserves thanks for producing this yearly list of hospitals, benevolent institutions, and public bodies connected with the social services. Copies can be had from the C.O.S., Denison House, 296, Vauxhall Bridge Road, S.W., or from the publishers (8s. 6d.).

The canteen, which was once regarded as a luxury or a nuisance in a factory, has become "the second power house of industry," and is playing a great part in the new industrial Britain. *Canteens at Work*, by C. G. GARDINER (Oxford University Press, 4s. 6d. net) is a very attractive primer on canteen lay-out, design, and equipment, purchase of food, menu planning, service, and finance. It is shown that a canteen need not be a liability even in terms of strict accountancy. It can directly pay for itself, apart altogether from its value as an asset in stimulating production. The book may be heartily commended to all works managers and welfare workers. We should like to know the basis for the statement that "nearly 70% of the working population of England goes to work to-day either without any breakfast at all or with only a light or insufficient meal." We can well believe that large numbers of women and girls rush to work without proper food, but what Izaak Walton called "a good, honest, wholesome, hungry breakfast"—for the men of the house at any rate—is a British custom that should be upheld and extended to all workers.

Dr. WILLIAM BOYD, professor of pathology and bacteriology in the University of Toronto, is almost as well known in this country as in Canada through his books on medical and surgical pathology. His *Introduction to Medical Science*, first published in 1937, set forth the elements of pathology as applied to medicine for the benefit mainly of medical students in the intermediate years of their course, and of nurses. In the second edition, thoroughly revised, which has now been published in this country by Henry Kimpton (16s.), the needs of nurses have been kept well in view. A new historical chapter has been added, and the chapter on bacteriology has been rewritten and greatly amplified. There are also new sections on clinical and laboratory methods; the uses of *x* rays and radium; the vitamins; and chemotherapy.

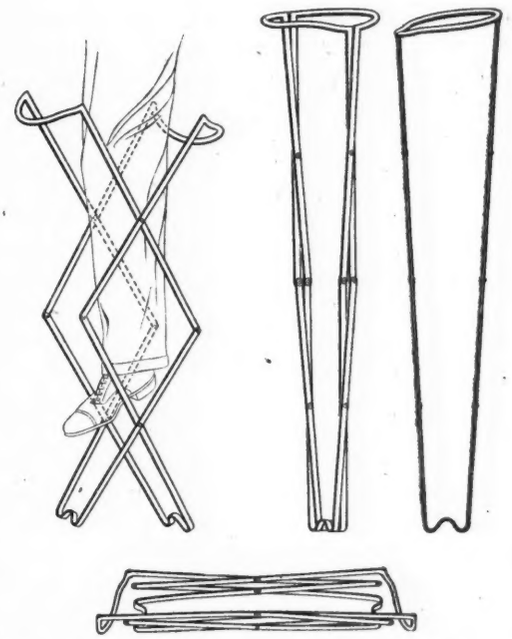
One of the queerest etymological coins of the war is the word "incident" as applied to the destruction wrought by a bomb. It suggests that to deal with the results of intense bombing is all in the night's work, and that idea is borne out in *The Conduct of A.R.P. Incidents*, by T. E. BROWNE, a shilling booklet published by Jordan and Sons, Ltd., and based on "blitz" experience in the London region. It has been compiled to assist the "incident officer," which every air-raid warden may on occasion become. The prompt rendering of help, the maintenance of communications, and the making of reports are all worked out in such detail as to make one almost lose sight of the threatened calamity in admiration of the organization designed to meet it. On the matter of calling a doctor to the scene of the "incident," it is pointed out that no attempt should be made to obtain him from his surgery or from the local first-aid post, but a report requesting his attendance should be made through the wardens' post, when a doctor whose name appears on a roster for that period will be sent. But even this rule, of course, is liable to variation. The circumstances may require not a single doctor but a mobile unit; or, again, the "incident" may be in a village, where the simplest procedure would be to apply to the surgery direct.

Preparations and Appliances

A FOLDING THOMAS SPLINT

Dr. J. G. FAYRER HOSKEN, D.P.H. (Dursley, Gloucestershire), writes:

The accompanying diagrams illustrate a portable "duplex" splint modelled on Thomas's pattern. It has the advantage of portability and extreme ease of application: moreover, one size will fit most patients. The clove-hitch extension bandage, when tied over the double notch, prevents the splint expanding, so that no other fastening is necessary. This is, of course, a "front-line" splint and not intended for hospital use. In the drawings no padding is shown, and in practice much material can be saved by leaving the outer third of the two half rings unpadded. This, of course, applies to any form of Thomas splint used in first aid. In the new models of the "duplex" splint the perineal angle of both elements is being rounded off to avoid discomfort.



BENZYL BENZOATE SOLUTION FOR SCABIES

Boots Pure Drug Co. have recently introduced "scobenol," a solution of benzyl benzoate for the treatment of scabies. It contains 25% benzyl benzoate, 25% soft soap, and 50% isopropyl alcohol, and is claimed to have the advantage that the constituents do not separate, nor does the solution need shaking.

Any improvements in the treatment of scabies at the present time are welcome, for the disease is spreading and appears not to have reached its peak. Some dermatologists prefer sulphur treatment as more successful, but it may be that this preference is due to over-optimism in expecting benzyl benzoate to cure in one application, whereas all know that sulphur must be repeatedly applied. Benzyl benzoate must also be applied repeatedly. Some, too, find benzyl benzoate painful, but this probably is true only when the skin is raw. The difficulty is cost, and benzyl benzoate is much more expensive than an emulsion of powdered derris root, which is another efficient agent.

A TRIPLE DYE JELLY

"Triofax" (Burroughs Wellcome and Co.) is a stable water-soluble jelly containing gentian violet, brilliant green, and euflavine, substances which have been recommended for treatment of burns of the face and hands. Triofax is accordingly recommended for burns, and it is probably not so effective for localizing infection as acriflavine or a watery solution of crystal violet.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY FEBRUARY 7 1942

SKIN HAZARDS IN AEROPLANE MANUFACTURE

The incidence of industrial dermatoses at the present time is high. The causes of this are evident. Industry is now making use of workers from higher age groups and in the circumstances cannot pick and choose. Women are being employed in increasing numbers. Men and women not previously used to industrial life are now having to take to it. New processes and new chemical compounds are being constantly introduced. Conditions of work in the black-out tend to produce the optimum conditions for skin troubles. These and other factors all operate in greater or less measure in the high incidence of dermatoses. The introduction of medical service into many industries and works will do much to deal rapidly and effectively with outbreaks of skin troubles, but the aim should be prevention. Every detail of the industry involved must be familiar to the doctor, or the tracking down of causes, difficult at the best of times, becomes impossible. Publication of the hazards of various industries in this country is not as general as we should like it to be. Medical officers in industry should, using proper discretion, be recording information on the manifold hazards of which they daily see the results. Published methods of prevention and treatment should be a familiar feature in medical journals.

These and other reflections are prompted by an excellent article on skin hazards in aeroplane manufacture,[1] in which L. Schwartz and J. P. Russell give a short but valuable account of the various stages in aeroplane manufacture with emphasis upon the inflammatory effects upon the skin of various substances with which the workers come into contact. The report is based on studies in nine factories making all kinds of craft and employing over 100,000 workers. The numbers of cases of dermatoses could be stated in only four of the works (117 in fifteen months), and some thirty-six active cases were seen by the authors in the course of their inspection: of these, twenty-four were of occupational origin. If we take this proportion and assume a similar incidence throughout the nine works there would be rather fewer than 200 cases in all for fifteen months—that is, 0.2% of the population employed. This is certainly a low figure, and it would be of interest to have the comparable figure in this country.

The principal parts of an aeroplane are the motor, the fuselage, wings and controls, and the flying instruments. The fuselage, and in most large 'planes the wings, tail, and controls, are constructed of moulded sheets of duralumin or other aluminium alloy, riveted or welded together. In many 'planes the framework is covered with a fabric rendered impervious by "doping"; "dope" consists essentially of a solution of cellulose acetate or nitrate in an organic solvent. Where welding is impossible iron or steel screws, nuts, and bolts are used, and these are made rust-proof by cadmium plating or by anodizing. One stage in the process at which dermatitis occurred was, in the factories studied, the handling of the sheets of alloy, which were heavily coated with a mixture of 96% petroleum and 4% animal or vegetable oil called "fish oil." Workers exposed to this mixture may develop hypersensitivity followed by dermatitis of forearms, face, and other exposed parts; gloves and overalls prevented this among those whose work permitted their use. It is interesting to note that the authors are doubtful about this "fish-oil" dermatitis, and are inclined to attribute it to organic inhibitors (anti-corrosion agents) in spite of the fact that the makers deny the presence of such agents. In some factories the metal sheets arrive covered with a protective varnish, to which certain workers developed a sensitivity. Another way to protect the sheets is to dip them into "line oil," which consists of soya-bean oil and spent varnish containing resins dissolved in a petroleum distillate (Stoddart solvent): dermatitis resulted in some men who were contaminated in this dipping; any of the constituents of the line oil can be the cause. The authors cast doubt upon the alleged "dural poisoning," and believe that it is due to the oils, varnishes, and paints. They recommend thorough cleansing of the sheets of alloy before they are introduced into the works; and the men engaged in this cleansing should wear rubber gloves and boots, and aprons, and sleeves made of impervious material such as the synthetic resins.

Anodizing of the metal must be preceded by removal of all dust, grease, and scale by immersing in acids and solvents and then washing in hot alkali. This is followed by a wash in water-and-soap solution, again rinsing in water, and then entry into the anodizing tank containing a solution of chromic acid and dichromates. In spite of great precaution there is still a risk from splashes and fume, which may cause dermatitis and ulcerations. In some cases nitric and hydrofluoric acids are also used and may give rise to severe dermatitis.

The problem of organic de-greasers has received much attention. These compounds act on the skin by removing the normal sebaceous matter and thus lead to cracking and sensitization. Local exhaust is of the first importance, and operatives should be provided with long rubber gauntlets, impervious sleeves buttoned at the wrist, and aprons also of impervious material. The authors advise the insertion of vaselin into the nostrils several times a day if there is exposure to fume of chromic and hydrofluoric acid, but we doubt the efficacy of this. In cleansing the skin emphasis is laid upon the avoidance of strong soap (does this mean highly alkaline soap?), bleaching agents, and solvents. A neutral sulphonated castor oil containing 2% of wetting agent is recommended for workers instead of soap for cleansing the hands after work. For workers with dry chapped skin a mixture of anhydrous lanoline and olive oil is advocated both before and after work. In discussing the process of de-greasing the authors state without qualification that "trichlorethylene is a fat solvent and can cause a chronic dry, cracked, fissured eczema of the hands and arms. It is also a sensitizer

[1] *Publ. Hlth. Rep.*, Wash., 1941, **56**, 1581.

and can cause a more or less generalized acute eczematoid type of dermatitis which begins as an erythema, becomes papular, then vesicular, and is followed by oozing, crusting, and desquamation." Opinions differ on the poisonous and dermatitic properties of trichlorethylene as it appears in industry; its widespread use calls for some considered statement, particularly in view of the above categorical utterance. Protection against trichlorethylene by ventilation and fume extraction is of course required, but the use of protective clothing or gloves presents a more difficult problem. Rubber and impervious synthetic materials are of no value. The authors suggest aprons, sleeves, and gloves made of polyvinyl alcohols. Re-fatting of the skin after exposure is an important safeguard against the de-greasing of the skin.

In the "doping" process there is at first irritation of eyes, nose, and throat from the solvent vapours, and there may be coughing and lacrimation, but these symptoms cease after a few minutes; it is suggested that organic esters exert an anaesthetic action on the mucous membranes. The volatile "dope" solvents are also fat solvents and as such can lead to eczematous changes in the skin. Similar protective measures must be taken against these solvents as against the de-greasing agents. The moulding of metal sheets by drop hammers or hydraulic presses is associated with much oil and grease; here oil folliculitis is met with, and the whole question resolves itself into one of cleanliness of skin, changing of clothes, leather or canvas gloves, and impervious sleeves and aprons. The fuel tank is constructed from moulded metal plates which are welded together and then pickled in potassium dichromate and nitric acid; here the skin risk is obvious. A compound of zinc chromate, asbestos, mica, a synthetic resin, and a drying oil in a volatile thinner is used for sealing the surface and may lead to dermatitis. Methods of protection should be like those in the "doping" process. A rubber compound encloses the tank but does not affect the skin. Other hazards such as sodium nitrite and sodium cyanide are met with, and the authors again advise the insertion of vaselin into the nose several times a day to prevent inflammation of the nasal mucosa from fume.

The machine shop, where parts are cut and drilled, is a place where dermatitis may readily occur. The causes here are already familiar to most industrial medical officers: minor injuries, dirty oil, and in some cases progressively increasing concentrations of antiseptics. Folliculitis on forearms and thighs is common and generally due to contact with oil-soaked sleeves and trousers. Oil acne, folliculitis, and boils can be prevented by cleanliness, frequent changing of the oils, and sterilization of recovered oils; other preventive measures include daily changes of working clothes, gloves, aprons, overalls, shower baths, clean wiping cloths free from metal chips, and those measures used for workers handling the greased alloy plates. Magnetic inspection involves the use of kerosene, a petroleum solvent, and a basic dyestuff (methyl violet) in methanol. Skin troubles may arise here from the fat-solvent action of the two former and the establishment of sensitivity to the dye. Gloves of natural rubber cannot be used in this case, and the authors recommend gloves of synthetic rubber or of polyvinyl alcohol (resistoflex). Toluol, turpentine, and petroleum distillates are employed as solvents and thinners in the paint shop; the pigment generally in use is zinc chromate, and the paint also contains a drying oil and a resin. The risk of skin irritation will be apparent, and the measures referred to above should be applied. In the welding of metal parts fluxes containing fluorides are used: nasal irritation with epistaxis and ulceration results, and again the authors recommend that vaselin should be inserted into the nostrils several times a day. In spot welding hydrofluoric acid and tragacanth are brushed on to the metal as a flux, and the utmost precaution is required to prevent the very bad burns which can result from the former. Hypersensitivity to the dust of certain woods used in the industry should be kept in mind and the affected people removed from exposure. *X*-ray examination of metal parts is carried out with such precaution that no adverse effects were found.

BOOKS AND THE WAR

Many readers will have been disquieted by the revelations of a recent correspondence in the *Times* and of a brochure, entitled *The Status of Books*, by Mr. Stanley Unwin.[1] It is not a question of a reduced ration of thrillers—Mr. Unwin quotes with approval another publisher's remark that "what we generally call fiction is merely the froth on the surface of the stream"—nor even of a dearth of explanations of why the war must last *n* years unless the author's strategy is adopted. Actually at least two-thirds of the total tonnage of paper used for books goes in reprints, covering not only literary classics but educational and scientific textbooks. It is probable that many of our readers have reason to know how difficult it is to obtain copies of books needed for professional studies. There is a vicious circle: stocks have been bombed out of existence, labour and paper to replenish them are refused. Mr. Unwin is both angry and surprised that powerful people, mostly educated and usually ready enough to extol the value of books, are in practice so contemptuous of the representations of those who know what the position is. He notes that His Majesty's Stationery Office is not, to put it mildly, a parsimonious economist of composition costs and paper. He might have added that much official printed matter of dubious value never reaches the stage of publication at all. The addiction of the professional civil servant to tabular statements becomes a passion in the wartime "administrator," who often does not even know that the setting of tables is one of the most skilful and time-consuming, and therefore most expensive, of the printer's arts.

The apparent indifference of educated men to a great evil is probably due to many reasons. Most men who care for books and have lived long enough to be influential have acquired, if not a library, at least a collection of books many of which will bear a second (or sometimes a first) reading. It has been said that the man who proclaims that for him the Bible and Shakespeare are sufficient reading is usually very ill acquainted with either; but it is certainly true that a well-read man needs fewer new books than less fortunate people. Then,

[1] Allen and Unwin, Ltd. (3d.)

though well-informed people sternly warn the public that the end of the war is distant and believe what they say, there is a good deal of difference between intellectual and emotional conviction. If we knew that by putting everything into the war "effort" peace would be accomplished in two or three years, we should cheerfully sacrifice even education, to say nothing of the intellectual solace which has kept some of us from despair. But we know nothing of the sort; indeed we know the exact contrary. It is already obvious that the chaos which succeeded November 11, 1918, will seem like a Saturnian age in comparison with what must follow the final collapse of the enemy in Europe and Asia at the end of this war. He would surely be a dangerously wishful thinker who budgeted for a return to stable conditions within five years of the next armistice. We have to face the fact that certainly two and probably more than two educational generations of young people must be trained wholly under wartime conditions. They must have books—reprints, revised editions, new books. Those who teach them must have opportunities to exchange new ideas and make known new truths. All this applies with special force to the medical sciences, because here the conditions of life since 1939 have brought and will continue to bring data which a hundred years of the pre-1939 epoch could not supply. Books and journals are not less but more important now than in peacetime because of the interruption of teaching. Most would agree that decentralization has not been a wholly unmixed evil, but it has necessarily brought to an end some teaching in special or ancillary branches of medical science which was of value. Again, the understandable preference of the fighting Services for "intensive" courses of instruction must result in disaster unless books are available. It is a common experience of specialist teachers to be asked to cover in two or three lectures what would normally occupy ten. There is only one way to meet this situation. The teacher must wholly recast his instruction and give explicit guidance in reading; this is useless if the books or papers recommended cannot be had.

It may be, as some hold, that nothing could have prevented the growth of the moral and intellectual virus which has poisoned the life of a continent. But it is at least arguable that four years' complete absorption in the war "effort," followed by years of intellectual paralysis owing to scarcity of books and laboratory facilities, swept and garnished the Central European house into which the devil entered. That danger is now our danger. Let the consuls look to it that the State does not suffer a lasting injury.

SOME POINTS ON YELLOW FEVER

In a leading article on yellow fever in the *Journal* of January 3 we observed that the problem of controlling the disease was one which could be solved only by international co-operation. Unfortunately this is hardly the most favourable moment in history for securing such co-operation. It is true that the International Health Office at Paris is still in being, but it is not in the best position in which to carry out its peacetime tasks. Obviously, too, the work of the Health Committee of the League of Nations must be much hampered, and its Eastern Bureau at Singapore, if indeed it is still acting there, must find that the dissemination of news on the spread of infection is made less easy by the necessary censorship imposed by strategical considerations. The problem of international measures in the control of infectious disease is one that will cry out for immediate solution when this war is over. In the meanwhile, with war in Africa, and with aircraft traffic between the Americas and West Africa and between Africa and India, the need for measures for controlling yellow fever is imperative. This is a matter which has always been in the mind of the various authorities concerned, and last year a special Interdepartmental Committee on Yellow Fever Control was set up under the chairmanship of the Medical Adviser to the Secretary of State for the Colonies to review the situation and consider what steps should be taken to tighten the preventive net that already existed.

The first desideratum would appear to be a consciousness of the risk among those in endemic areas and in what might be described as "areas at risk." Unless officials and personnel in such places as outlying posts and aerodromes are fully seized of the nature of the problem and of their responsibility in relation to it, they will tend to disregard technical measures of control or to apply them only half-heartedly.

No infectious disease can be controlled unless it is diagnosed in the first place, and, as with other conditions, the diagnosis of mild cases of yellow fever is by no means always easy: such cases, as we have previously pointed out, have, for example, been wrongly diagnosed as influenza. In endemic areas, therefore, a sample of blood must be taken from suspected cases for a yellow fever immunity test. If the patient recovers and the cause of his fever still remains in doubt, a second sample should be taken at the end of the third week from the onset of the illness. If a patient dies within ten days of the onset of a febrile illness, and diagnosis is in doubt, a specimen of liver should be forwarded to a laboratory equipped to make a histological diagnosis. The measure was especially valuable in disclosing the extent of "jungle yellow fever" in Brazil.

For quarantine purposes six days is recognized as the incubation period, and persons inoculated for the first time against yellow fever are protected against it on and after the tenth day. This protection is at a maximum for two years. There would appear to be a very good case for insisting on the inoculation against yellow fever of all Government officials in the danger zones—at all events in time of war. The statement of a person who has been in an endemic area that he had not been exposed to infection should not be accepted, and he should be subjected to the full quarantine precautions that are in force, unless of course he has been inoculated and has passed his ten days' probationary period. Anyone who has been inoculated while in an endemic area and has left it should remain in quarantine up to the fifteenth day from the date of inoculation: this is arrived at by adding the incubation period of six days to nine, the ninth day after inoculation being taken as the last day on which a person could be infected. The fear has been expressed that inoculation is attended by the circulation of transmissible virus in the blood stream of the inoculated person, but there is no scientific justification for this belief and therefore no need to restrict the movements of inoculated persons.

There is evident need for mosquito survey, in view especially of the fact that mosquitoes other than the *Aëdes* can transmit the virus of yellow fever. It is hardly necessary to stress the need in these days for the strictest precautions at aerodromes, and for the insect-proofing of aircraft. All these points have been considered by the

committee, which, among other things, has stressed the need for the frequent ascertainment of the potency of the vaccine used. It has suggested, too, that yellow fever research for Africa should be co-ordinated at the Yellow Fever Research Laboratory at Entebbe, which is under the direction of Dr. A. F. Mahaffy of the Rockefeller Foundation.

PHENOTHIAZINE FOR THREADWORMS

The study of infestation by threadworms has been much facilitated by the use of the anal swab in diagnosis, particularly the ingenious cellophane swab described by M. C. Hall.[1] It should be more widely known that the demonstration of ova by this method is much easier and more certain than the examination of faeces. Surveys made by this method have shown an incidence of 50% or more in children, and the treatment of oxyuriasis is therefore a problem of some magnitude. Unlike some of the larger or more harmful intestinal parasites, threadworms are difficult to eradicate, mainly because there is no intermediate host or stage in the life cycle, and ova transmitted to the mouth by fingers or otherwise can thus cause repeated reinfection. Older forms of treatment have yielded place recently to new anthelmintic drugs given by the mouth: hexylresorcinol and gentian violet have both been found useful. The latest addition to these remedies is phenothiazine (thiodiphenyl-amine), which was first advocated for the treatment of oxyuriasis by Manson-Bahr.[2] This drug has an established reputation as an anthelmintic in animals, and has also been used as a urinary antiseptic in man, because much of it is excreted by this route. Manson-Bahr found it effective in nine cases of oxyuriasis, but almost useless for hookworms and without effect on whipworms; he concludes from its failure in hookworm infestation that the drug is "ineffective for worms in the small intestine," but it would seem more likely that this is due to difference in parasitic species susceptibility. More recently D. Hubble[3] has acknowledged its efficacy in oxyuriasis, his experience embracing over thirty cases, but reported three cases in which anaemia was rapidly produced, accompanied in two by jaundice, which he interprets as evidence of a toxic hepatitis. That phenothiazine in comparatively large doses will cause an anaemia was observed by J. O. Thomas, J. B. McNaught, and F. De Eds[4]; they regarded this anaemia as probably haemolytic, but found that tests for bilirubin in the plasma were interfered with by red coloration due to the formation of thionol from leuco-thionol during the performance of the test—a difficulty also noted by Hubble. It is now[5] reported from Birmingham that a girl aged 6 who was given a total of 8.5 gm. phenothiazine for suspected threadworms rapidly developed a severe anaemia, and died twelve hours after a transfusion which was followed by hyperpyrexia. If such effects cannot with certainty be avoided by restriction of dosage, this treatment must be regarded as too dangerous; whether dosage can be so regulated is a matter for careful consideration. Against these alarming reports must be set that of E. Kuitunen Ekbaum,[6] who observed no ill effects whatever from a smaller dosage than that used by Hubble, and administered to a considerably larger number of patients. These included eighty-nine children and nine adults: of the former, seventy-six were cured by one short course of treatment, the criterion of cure being seven negative anal swabs on consecutive days; all but one of the remaining thirteen were cured by a second course. Of the adults, eight responded to one course, and the ninth to a second. It seems, therefore, to be generally agreed that phenothiazine is effective, and with dosage on a moderate scale it also appears to be safe. The behaviour of the drug in the body seems to merit more discussion than is accorded to it in these papers. Although itself a yellow powder almost insoluble in water, it is absorbed and excreted in the urine, colouring it red: according to F. De Eds, C. W. Eddy, and J. O. Thomas[7] the derivatives found in the urine are a water-soluble form of phenothiazine, thionol, and leuco-thionol. These authors also studied[8] the action of the drug as a urinary antiseptic, and from these papers it would scarcely be expected that any therapeutic effect could be obtained in the lower bowel, since the impression conveyed is that phenothiazine is largely if not wholly absorbed. Presumably some must remain in the bowel, but on this point there is no precise information in any of these studies. Partial absorption is usually also variable, and some knowledge of the factors governing it might well enable this treatment to be applied with greater assurance of success from a given dosage.

[1] *Amer. J. trop. Med.*, 1937, **17**, 445.
[2] *Lancet*, 1940, **2**, 808.
[3] Ibid., 1941, **2**, 600.
[4] *J. industr. Hyg.*, 1938, **20**, 419.
[5] *Lancet*, 1942, **1**, 86.
[6] *Canad. publ. Hlth. J.*, 1941, **32**, 308.

FLOCCULATION TESTS IN HEPATIC DISEASE

Certain changes in the plasma proteins in hepatic diseases have been recognized for many years, following the work of Whipple[9] on fibrinogen. The chief tendency noted is a rise in globulin and a fall in albumin and occasionally in fibrinogen, these deviations being particularly common in hepatic cirrhosis. Such changes, while not specific to liver disease, do suggest the existence of a derangement of protein metabolism, which is probably the basis of certain flocculation reactions recently advocated as liver function tests. The results of such tests, however, bear only a rough relation to the plasma proteins as usually estimated, and the mechanism is thought to depend upon qualitative changes in the globulin fraction. First, the Takata-Ara reaction,[10] originally introduced as a test for syphilis in the cerebrospinal fluid, and then adapted by Yezler[11] to its present use, employs an alkaline mercuric solution, the precipitation of which is prevented by normal but not by abnormal sera. Its rather uncritical adoption has now been deprecated by Magath[12] in a review which merits close attention. His principal criticisms are that the test is purely empiric, the technique is not standardized, positive results occur in a variety of non-hepatic conditions such as nephritis and tuberculosis, and many negatives are recorded in early hepatic cirrhosis. It is still true that the reaction is nearly always positive in advanced cirrhosis. The colloidal gold reaction, again adapted from its usual role in neurosyphilis, has been similarly employed on serum by Bayer[13] and by Gray.[14] It appears to be much more sensitive than the Takata-Ara reaction, being uniformly positive in hepatic cirrhosis. It is also frequently positive in syphilis without obvious liver involvement, but apart from this drawback it would appear to be a useful indicator of generalized hepatic dysfunction. Less work has been done on the Weltmann[15] coagulation band and upon the more recent cephalin-cholesterol flocculation test introduced by Hanger,[16] but according to reports by Pohle and Stewart[17] and by Rosenberg[18] the latter is about as sensitive as the colloidal gold reaction. It is uniformly positive in hepatic cirrhosis and almost uniformly negative in non-hepatic conditions, but does not appear to have been much studied in uncomplicated syphilis. A technical disadvantage is that the cephalin

[7] *J. Pharmacol.*, 1938, **64**, 250.
[8] Ibid., 1938, **64**, 280.
[9] *Amer. J. Physiol.*, 1914, **33**, 50.
[10] *Far East. Ass. trop. Med.*, 1925, **1**, 667. (Cited by Magath [12].)
[11] *Schweiz. med. Wschr.*, 1930, **60**, 52.
[12] *J. Lab. clin. Med.*, 1940, **26**, 156.
[13] *Klin. Wschr.*, 1937, **16**, 1570.
[14] *Arch. intern. Med.*, 1940, **65**, 524.
[15] *Med. Klinik*, 1930. **26**, 240.
[16] *J. clin. Invest.*, 1938, **18**, 261.
[17] Ibid., 1941, **20**, 241.
[18] *Arch. Surg.*, Chicago, 1941, **43**, 231.

must be specially prepared from sheep's brain and that different preparations may give different results.

Unfortunately none of these tests can distinguish between different liver affections, similar results being found in cirrhosis, acute hepatitis, hepatic metastases, chronic passive congestion, and even in many cases of obstructive jaundice. The field of usefulness would therefore appear to be limited to the demonstration of generalized hepatic disease which is not clinically evident—for example, the early case of cirrhosis without a palpable liver. There may also be some application to obstructive jaundice, on which divergent opinions have been expressed. Thus Rosenberg[18] found the cephalin-cholesterol reaction only weakly positive, whereas Pohle and Stewart[17] recorded many strong positives. Evidently more work needs to be done in correlating the results with the duration of the jaundice before a distinction between the toxic and obstructive varieties can be made on this basis.

FAT EMBOLISM

In the last few years cardiologists have come to realize that many of the obscure pyrexial and respiratory complications of heart disease are due to pulmonary infarction, and surgeons are now beginning to wonder what part fat embolism plays in the conglomerate of symptoms lumped under the heading "traumatic shock." It is probably fair comment to say that the pathologist who is on the look-out for fat embolism will find it in far more patients than ever presented symptoms from it in life. We know that the effects of pulmonary embolism by thrombus depend partly on the healthiness of the heart and partly on the proportion of the vasculature which is occluded, and the same should be true of embolism by fat. It is therefore necessary to make a distinction between clinical and subclinical fat embolism, and until this is done no useful comparison of findings in the ward and the post-mortem room can be made. A review of some of the data in the literature and results of some personal experiments on diagnosis and treatment are given in a recent paper by Scuderi.[1] It would appear that gross injuries to the bones and the adipose tissues are the most important causes of fat embolism. In experiments on dogs it is necessary to inject more than twice as much fat as the whole femur contains to ensure death from fat embolism, but conditions in the human lung after a bad accident may well be more conducive to fat embolism. Nevertheless quantities sufficient to produce symptoms should be capable of detection during life so that a firm diagnosis can be made. Chemical examination of the blood is worthless, because it does not distinguish the normally emulsified fat from the coarse droplets which produce embolism, and in metabolic disturbances far more fat is present in the blood than is ever likely to enter it by embolism. Scuderi found estimation of the surface tension of the serum of no value, but dark-field examination of the blood appeared promising. When olive oil was injected intravenously in the dog and blood was subsequently taken from the opposite leg, large droplets of olive oil, at least twice the diameter of an erythrocyte, could easily be demonstrated. Care must, of course, be taken to use a syringe and needle which have not been treated with oil or paraffin. Examination of the sputum is not helpful, as fat globules are found in the sputum in conditions other than fat embolism. The fat is excreted by the kidney, not through the glomeruli but only through the tubules. Scuderi points out that its detection in the urine is difficult because of a very elementary physical phenomenon, and that is that the fat droplets float on the surface of the urine and therefore are not excreted from the bladder unless the last few cubic centimetres of urine are expressed. The urine is then allowed to stand in a cold place overnight. Any questionable droplets on the surface are removed and stained with Sudan III, and the centrifuged deposit is examined microscopically. In dogs it is possible to demonstrate clouding of the lung fields in radiographs after experimental fat embolism, but it is doubtful whether pathognomonic findings could be expected in man. Scuderi does not mention the possible value of electrocardiograms or estimation of the circulation time, both of which can be done without disturbance of the patient.

No effective treatment has yet been found for fat embolism, though some surprisingly barbarous suggestions have been made. Pulmonary embolism in itself is enough to cause shock, quite apart from the primary injury. It has often been suggested that one should attempt to emulsify the fat by injections of bile salts or similar substances, but in animal experiments Scuderi had no success with decholin (sodium dehydrocholate) or gardinol (sodium lauryl alcohol sulphonate). The latter is one of the most efficient emulsifying agents known, so that this line of attack does not appear promising. Prophylaxis is rational in the form of avoidance of unnecessary or rough handling of patients, and immediate splinting and early reduction of all fractures. The results are difficult to assess owing to the relative infrequency of clinical fat embolism, but the whole field is a promising one for research.

[1] *Surg. Gynec. Obstet.*, 1941, **72**, 732.

THE CHURCHILL HOSPITAL

At Oxford on January 27 the new Churchill Hospital of the American Hospital in Britain was opened by the Duchess of Kent in the presence of Mr. Ernest Brown, the Minister of Health, and Mr. Bertram Cruger, representative in Britain of the British War Relief Society of America. During the critical days of August, 1940, a group of American surgeons left New York under the leadership of Dr. Philip Wilson to establish a hospital in Britain. These surgeons arrived in England on the first day of the air raids on London. They immediately started work at an E.M.S. hospital in the country. The American Hospital in Britain has functioned from September, 1940, to January, 1942, giving to the victims of air raids the benefits of two specialized types of surgery—orthopaedic and plastic. During 1941 a new hospital was built in Oxfordshire by the Emergency Medical Service of the Ministry of Health. Mr. G. R. Girdlestone suggested that this should be taken over and administered by the American surgeons. The American Hospital in Britain was accordingly transferred to Oxfordshire, and the new hospital was named the Churchill Hospital. The various buildings are so grouped that a bomb could do no great damage to the hospital as a whole. The wards are built around a courtyard, each ward having its own air-raid shelter. The hospital has accommodation for 600 patients and has a staff of twelve American doctors and about fifty American and Canadian nurses. It will function essentially as a reconstruction hospital. A medical service will also be formed, and other types of surgery besides orthopaedic and plastic work will be provided for as the necessity arises. It is hoped that after the war the hospital may remain as a permanent American Hospital in relation with the Oxford University Medical School, to help continue close scientific and cultural relations between the two nations, and that perhaps a similar British organization may be initiated in relation with a University in the U.S.A. The American Hospital in Britain has given fine service to Great Britain and has also been very valuable to the U.S.A. by training in methods of war surgery many American surgeons, some of whom are already serving in the U.S. Army or Navy.

FIRST-AID-POST WORK IN AIR RAIDS

BY

L. ARTHUR N. LINE, M.B.

My only reason for venturing on this paper is that eighteen months ago I should have been very grateful for any information, however meagre, about what one might expect to happen at a first-aid post during air raids. As fixed first-aid posts vary according to their locality, structure, and staff, it is advisable, first, briefly to describe the one of which my colleague Dr. W. G. Arthur and I are in charge. This consists of the larger part of a public baths adapted to its present use by the usual expedient of flooring over a swimming-bath and partitioning the resultant hall into rooms. It is situated on the edge of a big industrial district, and serves a large and thickly populated area. Such a post is compact, excellently heated, and has a large and independent supply of hot and cold water. To offset these advantages it has a single-span roof, which offers little overhead protection, and from which clouds of dust and dirt are shaken down by the vibration of any near-by explosion. The rooms are small, and, more important, this large hall cools down rapidly when the doors are constantly opened.

Staff and its Training

The staff consists of two medical officers, two dentists, a post officer (a retired nurse), one State-registered nurse, seventeen full-time (paid) staff (sixteen women, one man), and 140 part-time volunteers (110 women, thirty men). The problem confronting the medical officer is to create a unit which is efficient enough and sufficiently elastic to enable him to deal with ten or 100 cases admitted in rapid succession, and to do this with a partially trained staff. Recognizing this, in 1939 we produced a scheme of training under which the staff were trained to do efficiently what was within their capabilities, and their duties were limited to handling injured persons under doctors' orders. They were taught: (1) the immediate application of anti-shock measures; (2) to understand and remember verbal orders from the M.O.; (3) how to, and when not to, remove clothing; (4) the principles of asepsis, etc.; (5) to know where every item of equipment was kept; (6) the application, as ordered, of dressings and splints; and (7) complete familiarity with the casualty cards and forms.

We found that they could become reliable workers in this limited field, whereas any attempt to turn them into nurses would have been unwise, and, indeed, was impossible in the time and with the resources available. In actual raids they were remarkably efficient and were surprised at their own confidence. The only sign of nervousness was some hesitancy and slowness at first, which soon passed off.

Types of Casualty

In theory a first-aid post is to receive walking wounded and moderately wounded sitting cases, but no stretcher cases. In practice, however, should the "incidents" be numerous or near, almost any kind of casualty may be expected, and of those we received 54% were walking, 26% sitting, and 20% stretcher cases. Yet not one of these cases was, in the existing circumstances, wrongly sent to a first-aid post, which reflects the greatest credit on the first-aid parties who distinguished between the "direct to hospital" cases and the others, without medical aid, in the dark, and, in most instances, while raids were still in progress. Such good fortune must obviously not be depended upon.

In one raid we received in all eighty cases: six of abrasions and contusions (two were in elderly and shocked persons); two of head wounds and concussion; one of penetrating wound of the skull (moribund on admission); two of compound fractures (elbow, tibia, and fibula); three of simple fracture (humerus, Colles's, and radius and ulna); twenty-six of lacerated wounds (from flying debris); one of (glass) abrasions of both corneae; one of deeply penetrating wound of the thigh (glass); and thirty-eight of multiple wounds from flying glass.

No case of hysteria was seen in this or any other raid, though we did see some hysteria among "shelterers" during long "alerts" without local "incidents." We found that elderly people with even mild injuries stood the cold, dark, confusion, and misery of a raid very badly, the mental shock of losing their home playing a part, and some died a day or two later having given us little evidence to justify such a prognosis. The ultimate prognosis of all major injuries was largely dependent upon the degree of exposure to cold, etc., after injury. Gross haemorrhage was not as common as we anticipated. We used no tourniquets; those cases of bleeding that we had were treated either by packing the wound with dry gauze or by picking up the vessels when they could readily be found. Very few burns were seen, and these were not extensive or severe. (The problem of first-aid treatment of burns was solved by asking the surgeon in charge of the receiving hospital what treatment he preferred for cases sent on to him: he decided upon 2% sod. bic. compresses.)

Few cases had had any first-aid treatment. No splints had been applied, a rough bandage or sling being the usual maximum. The bulk of casualties were therefore mild, and the problems presented arose chiefly from their number, the rate of arrival, and also from the difficulty of distinguishing patients from friends and relatives, as often they were all equally begrimed.

Organization

The number of staff needed was at least thirty-two: sixteen first-aid dressers (four pairs on each side, male and female): two first-aid dressers for "reception": one (man) at entrance door, and one (man) at exit door; two waiting-room clerks; two canteen workers; one telephone clerk; four stretcher-bearers; a post officer; one S.R.N.; one or two dentists.

It was found that the small "reception" rooms at the entrance were unusable for their intended purpose; if there were few casualties they were unnecessary, and if many they were too small to allow any real sorting; in either case, with the doors continually open they were too cold for patients, even slightly injured ones, to wait in. Two reliable first-aid workers dealt with the reception of cases as follows. Stretcher cases were passed straight into the treatment room, whatever the injury, as they took up too much space in the reception room; sitting cases were passed straight in, if possible, to prevent waste of time in transport. Walking cases were sorted on their own merits, the criterion being their general condition rather than their injury. No serious attempt was made to separate the sexes, it being both unnecessary and impossible.

Treatment Given

As each case came in it was taken over by a pair of dressers, who made the patient comfortable, applied warmth, exposed wounds, and removed wet clothing, etc., until the M.O. came, examined the casualty, and ordered treatment. Casualty cards (M.P.C. 46) were not filled in until treatment was completed unless the M.O. wanted a drug given, in which case the dose was noted by him on the card so that it might be administered without delay. All injections, both hypodermic and intramuscular, were given by the dentists; this ensured both accuracy and rapidity and saved a great deal of the M.O.'s time. The dose was written on the card by the M.O., the dresser took the card to the dentist, who initialled it after administering the drug and entering upon the card the time it was given. The syringes were charged either by the dentist or by a qualified chemist. Thus the M.O. could see every case within a few minutes of arrival or at once; cases were never out of his sight, and he could return to any serious case as often as he wished, while keeping dressers at work on others. He would order preparations for wound suture, go and look at another case or so, return and put in the sutures, give orders for the dressing and disposal of the case, and pass on. The personnel were quite capable of doing their part in the scheme.

All fractures were immobilized. Thomas splints were used as necessary, no haste was needed, and we took well over the ten minutes allowed. Large wounds, after control of bleeding, had a "mine" dressing applied, but no effort was made to clean it up as the casualty went straight to hospital for full surgical toilet. Patients who had homes to go to were treated as completely as possible; simple fractures were immobilized and the patients were told to report to hospital next day; incised wounds were sutured, and some small superficial lacerated wounds were excised under 2% novocain local anaesthesia. No general anaesthetics were given or needed. Morphine, grain 1/4 hypodermically, was usually sufficient for all cases received, but was

repeated in some instances. If a casualty had no home and was incapable of looking after himself at a rest home, he had to go to hospital in any case, so no complete treatment was attempted, but if time allowed these patients were cleaned up so that they could be put to bed with the minimum of trouble to the hospital staff. The dressers spent much time in washing scalps free of tiny fragments of glass, which was often finely powdered; the gas-cleansing sinks were used for this purpose. The M.O.s were mobile and invariably went to the patient, dressing trolleys making this easy. The trolleys, which carried a standard set of simple instruments (sterile), were cheap unpainted dinner wagons.

When treatment was completed the dresser was responsible for filling up M.P.C. 46 and handing over this and the patient, together with instructions as to disposal, to the waiting-room (or "recovery-room") attendant. A clerk filled up the casualty record form (M.P.C. 44) here, where hot drinks were also given, as elsewhere, when needed. The evacuation of cases was found to require a capable administrator to make full use of ambulances, cars, and especially the lulls in the raids, otherwise there was congestion at the post. We used our post officer for this duty. The supply of transport in an urban district would appear to be reasonably good, for areas not greatly affected can supply transport to augment that of the heavily raided area. An idea of the value of the fixed first-aid post is provided by the fact that of the eighty casualties received in this raid, fifty-three were sent home or to a rest home instead of being a charge on the local hospital.

Some Precautionary Measures

The temperature of the post should be maintained, however trying to the staff before the raid. It was found very necessary to make arrangements beforehand to collect blankets from the ambulances, etc., to replace those used for patients going out; unless this is done a serious shortage rapidly arises. Hot-water bottles seem to vanish despite every effort. A shock cage may be of inestimable value and is cheap and easy to make; it can be heated electrically, because the current, should it fail, is rapidly restored. The gas supply, however, will almost certainly be poor even if there are no local "incidents," and spare Primus stoves should be instantly available for the sterilizer and to prepare hot drinks. Some sort of emergency water supply is advisable. An emergency lighting set may be of great value, not merely in case of failure of current, but also because full lighting is impossible if the black-out is breached. A portable spotlight, made from a car headlamp on an adjustable arm and supplied from a battery, has been of great value to us. We used far more wool than we anticipated in our first major raid; it is hardly necessary to add that it should be cut to suitable sizes, ready for use.

Casualties arrive in batches, often with little warning, and it is important to remember this and make use of the intervals to clear up the post before resting the staff. We found our two chaplains of great value, especially where patients were anxious as to the welfare of their relatives. All tables, etc., should be kept covered until casualties actually arrive. It is advisable to have a reserve and rested shift ready to carry on from, say, 8 a.m. till noon after a night raid, as casualties continue to trickle in during this period.

We made many errors from ignorance and inexperience which are not recorded here, but from which we learnt much, not the least important being the need for keeping all organization as flexible as possible.

E. Kellermann (*Tubercle*, 1941, **22**, 212) studied the effect of war conditions on a group of thirty-three patients receiving artificial pneumothorax at a dispensary, with the following results: (1) The first eighteen months of the war produced no appreciable change in their clinical condition. (2) There was a definite tendency towards loss of weight and failure to gain weight. (3) There was no evidence that loss of weight was due to food rationing. There was evidence that in war conditions loss of weight and failure to gain weight were due to a combination of extrinsic factors such as anxiety and excitement, resulting from the military situation and from prolonged and intense aerial activity.

Nova et Vetera

CHINESE MEDICINE, ANCIENT AND MODERN

As Chinese civilization is the oldest in the world there ought to be a considerable body of information about its ancient medicine. It is difficult, however, to obtain authentic material, and the subject is ignored in some works on the history of medicine, which begin with the Greeks in 500 B.C. Chinese medicine is much older than that, and some of its records go back to the third millennium B.C. and to three famous rulers—one of them still the patron saint of Chinese drug stores—each of whom wrote a book on diseases and their remedies. Dr. George Hoan Hsing Woo recently gave an interesting address on the subject at the China Institute in London. He described how ancient Chinese medicine was based in part on the theory of two principles, the male and the female, whose equilibrium signified perfect health. The male and female principles were even extended to the classification of drugs. Another theory supposed the human body in health to correspond to the harmonious proportion of the five fundamental elements (apparently, in China, wood is added to the Aristotelian four).

Dr. Woo spoke also of four standard methods of diagnosis in the old Chinese medicine—namely, observation, interrogation, auscultation, and palpation. By observation was meant the study of the complexion and the facies; by interrogation, the history; by auscultation, only the strength and tone of the voice of the patient; and by palpation, the pulse. The feeling of the pulse was greatly elaborated in old China; more than 150 volumes were written on this subject. There was a special technique for it: the use of a silk cushion, the noting of the difference between the right and the left, the careful disposition of the fingers in taking the pulse, and many elaborate deductions as to the state of the patient were drawn by these practitioners, who had "eyes at their finger-tips."

Early Endocrinology

On the treatment of diseases Dr. Woo referred to the famous work *Pen Tsao* on the materia medica, which was produced in the third century A.D. and re-edited in 1578. Much of Chinese medical literature, by the way, appears to be commentaries on the original books, and then commentaries on the commentaries. Dr. Woo claimed for the Chinese that they were early practitioners in endocrinology. Thousands of years ago a deficiency in a gland—the thyroid, for example—was treated by the use of a gland from an animal. Animal liver was prescribed for diseases of the blood. Pig's stomach was given in a concentrated bouillon for general weakness or anaemia; also for anaemia an infusion from a piece of rusty iron wrapped in gauze or silk was given. The bones of the dinosaur, which had been dug up in the desert and were rich in calcium, were used in the treatment of children suffering from fits. The Chinese drug ma huang, from which ephedrine was first prepared, was given in cases of asthma. Behind the crudity of much of the treatment was an acute and subtle observation and what might be called clinical instinct, although the scientific background was lacking.

From all this Dr. Woo turned to modern medicine, which might be said to date from 1835, when Dr. Peter Parker of the American Mission Board opened the first hospital in Canton—a hospital, by the way, where Sun Yat-sen more than sixty years later started his medical studies. For three-quarters of a century, until the establishment of the Republic in 1912, medical organization and the teaching of medicine were in the hands of missionaries. Sun Yat-sen created a Bureau of Health in Peking in 1912, but not until 1927, when the Central Government of General Chiang Kai-shek was established in Nanking, was a Ministry of Health set up. Until then, while there had been an almost violent enthusiasm for Western knowledge, it had not been properly canalized. It took the form of a blind copying of Western methods, and the various medical schools took their colour—American, British, French, German, as the case might be—from the country in which their teachers had been educated. By 1933 an official medical curriculum was established by the Ministry of Education for all medical schools.

State Medical Service

In the following year a system of State medicine was instituted. The opposition to State medicine in England, said Dr. Woo, was understandable in view of the deeply rooted traditions of the voluntary system, but in China, of course, it had virgin soil. If it was argued that a State medical service tended to be bureaucratic and impersonal, was there not, on the other hand, a danger in competitive private practice?

In medical education in China two kinds of training are now established, one lasting for four years and one, with a higher degree, for six. There are about 10,000 qualified and registered medical practitioners—a fantastically small number for a population of 480 millions. The Sino-Japanese War—in fact every major military event in it—has brought new problems for the medical service. Dr. Woo gave some statistics concerning health conditions in China. Infectious diseases account for 41% of all mortality, and it is to the problem of prevention of these diseases that the medical service is addressing itself. He added that the National Government is encouraging the growth of the new medicine in China, one indication being its categorical refusal to register the schools of the association of native practitioners. This was all part of the transformation, he said, whereby China was turning itself into a major modern State in the family of nations. Its progress, while not always obvious, had been consistent.

A MEDICAL GEOLOGIST

William Henry Fitton, M.D. (1780-1861)

Dr. Fitton's interests were mainly geological. There is a good account of him in the *Dictionary of National Biography*, and the sole reason for this short note is that the writer some years ago secured for a few shillings from a second-hand book catalogue a well-bound octavo volume containing a collection of articles contributed by Dr. Fitton to the *Edinburgh Review* between the years 1817 and 1849. It was obviously a treasured possession of the doctor's, and on the fly-leaf he has inscribed his son's name: "Frederick Chambers Fitton, from his father: October, 1858." This was three years before his death, and the writing is rather shaky.

From *Alumni Dublinenses* (1595-1846) I find that he entered as a pensioner at Trinity College, Dublin, on July 7, 1794 (under Mr. Porter), at the age of 14 years. He was the son of Nicholas, *pragmaticus* (probably an attorney), and was born in Co. Dublin. He took his B.A. in 1799; his M.B., M.D. in 1815; and was Fellow Commoner of Trinity College, Cambridge. He appears to have studied geology at Edinburgh, and later practised physic at Northampton. After his marriage he moved to London, and gave himself up entirely to geology. For many years he was secretary of the Geological Society, and president in 1828. His F.R.S. dated from 1815. In 1852 he was awarded the Wollaston Medal. His chief geological work was done from 1824 to 1836, when he laid down the proper succession of strata between oolite and chalk. He died in 1861.

The volume has a printed title-page: "Articles published in the *Edinburgh Review*, 1817-1849, by W. H. Fitton, M.D." There is also a printed page of contents consisting of eight items. These are:

1. *Report on Lunatic Asylums.*—*E.R.*, vol. xxviii, No. 56, August, 1817.
2. *Transactions of the Geological Society*, established in November, 1807.—*E.R.*, vol. xxix, No. 57, November, 1817.
3. Smith's *Geology of England.*—*E.R.*, vol. xxix, No. 58, February, 1818.
4. Larrey's *Surgical Campaigns.*—*E.R.*, vol. xxxi, No. 62, March, 1819.
5. Buckland's *Reliquae Diluvianae.*—*E.R.*, vol. xxxix, No. 77, October, 1923.
6. Lyell's *Elements of Geology*. Huttonian Theory of the Earth. —*E.R.*, vol. lxix, No. 140, July, 1839.
7. *The Silurian System*, by R. I. Murchison.—*E.R.*, vol. lxxiii, No. 147, April, 1841.
8. *Statistics of Coal*, by Richard Cowling Taylor.—*E.R.*, vol. xc, No. 182, October, 1849.

The volume makes up about 266 pages. Lyell's *Elements of Geology* is furnished with a separate title-page. It is obvious that Dr. Fitton took his reviewing seriously. I dipped into the review of Buckland's relics of the deluge and found it a full-dress affair. Medicine is inclined to chide theology for attempting to square geological facts with the sacred writings. The review of Larrey's surgical campaigns is most interesting. The book has been deposited in the library of the Royal Society of Medicine, and may be of use to the biographers of the profession in the future.

R. R. J.

INSECTICIDES AGAINST BED-BUGS IN SHELTERS

RECOMMENDATIONS BY A COMMITTEE OF THE M.R.C.

On the basis of a report from a subcommittee appointed to examine the question, the Bed-bug Infestation Committee of the Medical Research Council recommends the following insecticide formulae as most suitable for use in air-raid shelters under the conditions now prevailing.

1. *Pyrethrins in Kerosene.*—The preparation to have a guaranteed content of 0.6% to 0.8% of the pyrethrins described as I and II. Alternatively, a weaker pyrethrin solution made equally toxic for bugs by the use of an adjuvant harmless to human beings may be accepted.

2. *Thiocyanates.*—(*a*) Lethane in kerosene. To have a guaranteed content of 6% "lethane 384." (*b*) Lauryl thiocyanate in kerosene. To have a guaranteed content of 3% of lauryl thiocyanate.

3. *Heavy Coal-tar Naphtha with Cresylic Acid.*—The cresylic acid (5%) to be dissolved in heavy coal-tar naphtha complying with the following specification: (*a*) Specific gravity at 60° F.: not less than 0.835 or greater than 0.910. (*b*) Distillation range (S.T.P.T.C. apparatus): not more than 10% shall distil at 160° C. and not less than 90% at 190° C. (*c*) Flash point (Abel): not less than 100° F. (*d*) Tar bases: not to exceed 0.25%.

It has not been considered desirable to attempt to estimate the cost of the various formulae, and it is assumed that local authorities, when ordering, will be guided by the supply position and will ensure that the composition of any insecticide they desire to use is fully disclosed by the makers and a guarantee obtained that such composition will not be changed without notification.

Necessary Precautions

The following precautions should be observed when any of these preparations are used: (1) They should only be used when a shelter is empty, and an interval of at least two hours should be allowed to elapse before the shelter is again occupied. (2) To avoid any possible risks of fire the use of naked lights and smoking should be strictly prohibited while handling and spraying these insecticides. (3) Owing to the interaction of hypochlorites and pyrethrine, or even traces of cresylic acid, air disinfection of shelters cannot be carried out concurrently when either formula 1 or 3 is used. Several days should elapse between the two forms of treatment. (4) Owing to the possible solvent action of heavy naphtha, care should be taken when using formula 3 to prevent its coming into direct contact with rubber.

Methods of Application

The committee emphasizes that proper atomization of the insecticide is essential when sprayed. Power sprayers in large shelters and hand sprayers of the "flit" or similar type in smaller shelters are advocated. A brush might be used for cracks and other readily accessible places which might harbour bed-bugs. Much may be done to prevent infestations by the avoidance or obliteration of places likely to harbour bed-bugs, and for the latter purpose cement-washing, distempering, and painting may all be useful if supplies and labour are available. Where a high standard of cleanliness is maintained in shelters the risks of serious infestations from bed-bugs are greatly lessened.

The report for 1940 of the Cassel Hospital for Functional Nervous Disorders is issued from its present address, Ash Hall, Bucknall, Stoke-on-Trent, and opens with a tribute to the late Dr. T. A. Ross, who was medical director of the hospital for its first fifteen years. The course of the war during 1940, and in particular the capture of the Channel ports by the Germans, led to a search for safer accommodation and, when an alternative home had been found, to evacuation from Penshurst. The total available accommodation at Ash Hall will be for thirty-five patients. The chief annual survey and financial statement is not accompanied by a medical report this year.

Correspondence

The Teaching of Anatomy

SIR,—In view of the discussions on the reorganization of the medical curriculum which have lately appeared in the medical press, we, the undersigned teachers of anatomy, desire to record some of the conclusions which we ourselves have reached on the teaching of our subject. We have reason to believe that many other teachers of anatomy will agree with these conclusions.

We are of the opinion that the usual curriculum for anatomy which is followed at present is partly determined by traditional ideas which are no longer valid, and that it requires revision in certain directions. Much of the anatomy which the medical student is commonly required to learn is concerned with topographical details of importance only to the surgical specialist, and we believe that such details are quite unnecessary for the ordinary medical student who is working for the pre-clinical examination. It is necessary, rather, to plan a curriculum whose primary aim should be to provide the best possible education for the general practitioner. Such a training should provide a sound educational approach to the knowledge of any branch of anatomy, and a foundation on which the minutiae of applied anatomy required for clinical specialization can be built up at a later stage in special courses of instruction. It is far more important that a student should be well acquainted with general anatomical principles than that he should memorize numbers of topographical facts of which a large proportion are likely to be of no practical value to him and at the same time possess no educational value.

The teaching of anatomy, we believe, must cover the whole realm of macroscopic and microscopic structure, and it is essential for a proper comprehension of structural organization that histology should be taught in direct relation to the study of gross structure and of embryology and histogenesis. Embryological study should direct attention to morphogenetic mechanisms rather than to the descriptive details of developmental stages, and much more stress should be laid on methods of studying morphogenetic processes. We believe, also, that great importance should be attached to courses of instruction, combined with practical study, on general principles of structural organization, with special reference to processes of tissue differentiation, growth and repair, structural adaptation in response to functional requirements, the influence of mechanical, hormonal, and other factors in the induction of structural modification, and so forth.

The time allotted to topographical anatomy can, we believe, be considerably abbreviated by the elimination of the study of topographical minutiae which are unlikely to be of any practical value to the general practitioner. It is important, also, that the teaching of topographical anatomy should be more systematized. It has already been demonstrated in some medical schools that it is perfectly feasible to arrange courses of dissection so that all students in the same year are engaged on the practical study of the same part of the body at the same time, and we suggest that this arrangement should be widely adopted. Lectures on the anatomy of the living body, radiological anatomy, histology, and embryology can then be planned and co-ordinated so that they deal each term with the part of the body which is being studied by practical dissection, allowing of a much closer correlation than is possible in the usual curriculum.

Lastly, we believe that it is desirable that students should be given more instruction on the post-natal growth of the body and its relation to nutritional, hormonal, and other factors. A course of lectures on human genetics is also of considerable practical importance, and this would be an appropriate sequel to the study of human embryology.

We realize that some difficulties may arise in an attempt to put into immediate practice all the improvements of the anatomical curriculum which we envisage, and we are now concerned with the means whereby these difficulties may best be overcome. We believe that one of the first requisites for the revision of the curriculum along progressive lines is the elimination from examination papers of the type of question which demands the memorization by the student of unnecessary topographical minutiae, and the inclusion of questions which demand a knowledge of the principles of the structural organization of the body and of the processes underlying development and growth.—We are, etc.,

A. B. APPLETON. W. J. HAMILTON.
J. D. BOYD. J. WHILLIS.
W. E. LE GROS CLARK.

Preserving the Race in Post-war Reconstruction

SIR,—The recent uniting of two large public schools because of lack of pupils and the gradual closure or amalgamation of preparatory schools throughout the country are reminders of the steady decrease in the supply of young people to carry on the British races. In the *Journal* of January 17 (p. 81) Lord Dawson of Penn is reported to have said that if the trends of population to-day persisted there was a prospect that the total population of England and Wales would have declined by three and a half millions by 1965. This view is borne out by the vital statistics of the country. The number of the population is, in fact, being kept up at present largely through the average increase in length of life, and the survival of septuagenarians and octogenarians who have mostly long passed the stage of usefulness to the community at large and are rather liabilities than assets.

In 1891 the proportion of the total population under 5 years of age was 10%; in 1931 it was 5.8%. Within the same census periods the proportion of children of school age steadily decreased from 21.2% to 12.2% of the total population. The annual rate of increase by excess of births over deaths per 1,000 living was over 14 sixty years ago. At the end of the last century the excess was about 12. In 1929 it was about 3. At the present day the excess has practically disappeared, though man- and woman-power were never more necessary than at present. If this process of decline continues, the nation obviously cannot continue to have any prominence after a few more generations. A somewhat similar trend applies to the Dominions and to other English-speaking communities.

For many years the death rates in this country were gradually reduced by the continuous improvement in public health, and this reduction lasted well into the present century. Of late years, however, the death rates have been steadily increasing again, largely because of the increased age of the population and the necessarily high death rate of old people.

The causes of the reduction in the birth rate are mainly social, and have to be considered in reconstruction if the nation is to be perpetuated. In the front rank of causes is the unwillingness of so many married persons to have children, or perhaps only one, among the reasons for which the trouble and the expense are prominent. There is no doubt that the life of a woman during child-bearing and child-rearing is a very hard one in all but the very wealthy homes. Formerly, parents in the so-called middle classes could for a moderate outlay obtain sufficient domestic help to make the bringing up of children easier. The era of friendly and moderately expensive domestic service in homes of smaller means where there are babies has more and more disappeared. It does not seem just or even possible that a woman should be expected to look after a husband, a house, and a growing family of children without material assistance. In homes where the income is equal one can find contrasts of this sort: in the one, with no children—domestic service, a motor car, pet animals, holidays, tickets for theatres, concerts, films, etc.; and in the other, with children—no domestic help, very heavy domestic duties, and lack of means to provide enjoyment as in the other home. In homes where means for employing any domestic service do not exist, the contrast is equally striking if on somewhat different lines. Hitherto, fortunately, a large number of married persons have been content to set the pleasure of bringing up a family against the luxuries of a better financial position, but their number is evidently diminishing rapidly.

There are, of course, various other reasons for the unwillingness of women to have children. The above is but one example. Women are doing excellent war work and competing successfully in work formerly considered exclusively men's work. I suppose that, with training, men could become excel-

lent housekeepers and domestic servants, but in the matter of bearing children the country depends on women, and they and their views require every consideration.

The gradual disappearance of the nation is a complicated problem, but there must be remedies. Married women bringing up children should have much more assistance, material and financial. The war has demonstrated that if women are to do extra work their children must be looked after in nurseries or nursery schools. In reconstruction after the war, permanent assistance of this nature must be arranged. Financially much could be done by remission of taxation and by housing relief where there is a young family. Take for instance a council housing scheme: to avoid overcrowding the larger houses must be occupied by those with the larger families; to the already higher cost of the family has to be added the higher rent and rates. It would not be difficult so to arrange a housing scheme that the larger houses were allotted to a large family at the same rent as the small house to those with no child or a small family of one. This is but an example of matters which could be dealt with not merely after the war but even now. In the reconstruction, vital to the nation as regards its decreasing population, financial and physical assistance in homes with families is essential, and can be provided without injustice to anyone, and to the relief of the very hard-worked women of all classes.

A survey of the whole position is necessary if the nation is to be preserved. The cynics who wonder in these days if this is worth while are still in the minority, and most of us would prefer to think of a Britain still occupied by British-born people in the future.—I am, etc.,

Eastbourne. W. G. WILLOUGHBY, M.D.Lond.

Infective Hepatitis

SIR,—I have read with interest Dr. J. L. Newman's article on infective hepatitis (January 17, p. 61). The subject is a topical one, as infectious jaundice is now prevalent in North-East Essex. The disease does not appear to be confined to village communities; many cases have occurred in Colchester and in other towns in the area. In small villages its appearance is more noticeable, partly because a more comprehensive view of the population can be taken by one individual, and partly because the incidence of the disease is higher.

In two villages in this neighbourhood, with populations varying between 200 and 300 persons, I have ascertained that approximately 7% of the community has suffered from jaundice during the last three months; if to these cases are added more doubtful examples of the condition in which there has been fever with vomiting and diarrhoea but without obvious clinical jaundice, the figure would amount to nearly 20% of the population. Five practitioners who work in the town of Colchester have informed me that during the last three months they have attended 14, 12, 10, 4, and 2 cases of jaundice respectively. There have been several examples where whole families have been affected. An instance in my own experience was that of a household consisting of mother, daughter, and two sons, who were affected on November 2, December 21, January 2, and January 5. In other instances one or more members of a family have suffered from jaundice while others in the same family have had a transient febrile illness associated with diarrhoea and vomiting. In the local hospital eight persons, either members of the staff or patients, have contracted this form of hepatitis; similar cases have occurred in a large E.M.S. hospital. In both these institutions the disease was traced to a child patient.

It is reasonable to suppose that the present outbreak is not limited to this part of the country; I have no information about other areas. A similar epidemic to the present one existed here in the autumn of 1939 and in the early part of the following year. Between these outbreaks there have been sporadic cases. During this time I have seen six cases, presumably of similar aetiology, who developed atrophy of the liver. Four of these were fatal, and full post-mortem examinations were made. In two of these latter the illness was fulminant, ushered in by cerebral symptoms, so that meningitis was at first suspected. Death occurred within two days and five days of onset, and in the first case jaundice was evident for only a few hours before death. In the second case the degree of icterus was mild. In the other examples the disease started as in ordinary infective hepatitis, but the jaundice, instead of clearing in the usual period of time, progressed over a course of months to a fatal issue. In one such case the jaundice waxed and waned for as long as a year before arriving at the terminal phase of cholaemia. Two other cases recently seen appeared to have atrophy of a subacute type: their condition was so grave that little hope of recovery could be held out.

Post-mortem examination in the fatal cases has shown diffuse necrosis of the liver. The normal architecture of the organ has been completely lost, and there has been widespread infiltration with lymphocytes. The liver cells are occupied by large globules of fat. Here and there a normal liver cell may be seen. In the acute cases the size of the liver has not been altered; its colour has been more yellow than usual; haemorrhagic areas have not been noticed. In the more chronic cases there is evidence of regeneration of bile capillaries with commencing cirrhosis, the extent of which depends on the duration of the disease. The organ as a whole is much increased in size.

The incubation period for infective hepatitis appears to be 3 to 4 weeks so far as its lower limit is concerned; in some cases, however, it may be apparently much prolonged. Although there is no conclusive proof as to the nature of the infective agent, there seems little doubt that it is a virus. In the *Journal* of September 24, 1938 (p. 677), I reported a series of cases of jaundice, some with atrophy of the liver, following the use of prophylactic measles serum. As these cases furnish evidence to support the hypothesis of virus infection, I quote the relevant paragraphs from my letter:

"On June 1, 1937, seven children housed in one block of a large institution for mental defectives were inoculated with convalescent measles serum to protect them from the disease, with which they had recently been in contact. Each child received 4.5 c.cm. of the serum, which came from the same batch and which was obtained from a reputable firm. After an interval varying between seventy-eight and eighty-three days these seven children developed jaundice and became gravely ill. No other child in the institution at that time had jaundice. The disease in its early stages or in its milder forms appeared to be indistinguishable from common infective hepatitis (infective catarrhal jaundice), but of the seven cases three developed rapidly increasing signs of liver failure, terminating in death. Material derived from post-mortem examination of the fatal cases showed a condition of acute atrophy of the liver.

"Two months after the onset of the jaundice in the seven children who had been inoculated with convalescent measles serum two other children who had been in contact with the cases, but who had not been inoculated with serum, became ill with jaundice. Their illness did not appear to differ in any respect from common infective hepatitis."

The processes to which the convalescent measles serum were subjected excluded a bacterial cause for the jaundice. It is reasonable to assume that there was some hepatotoxic substance in the serum, and the occurrence of secondary cases of typical catarrhal jaundice in persons who had been in contact with the primary inoculated cases suggested strongly that such a hepatotoxin was, in fact, a virus. Similar cases were reported from Oxford at the same time (personal communication). It is probable that the convalescent serum had been collected from some individual sickening for jaundice. Why there should be such a long latent interval after the inoculation, and why the hepatitis in such inoculated cases should assume so fulminant a form, are difficult to explain.

The above facts suggest that jaundice might well be transmitted by blood transfusion. In these days of wholesale blood collection from donors it would be as well to bear this in mind, and refrain from collecting blood from villages at times when catarrhal jaundice is known to be epidemic in the locality.—I am, etc.,

S. A. PROPERT,
Physician, Essex County Hospital, Colchester; Group Adviser, E.M.S.

Rehabilitation of Tuberculous Patients

SIR,—In his reply to a question in the House of Commons on December 4 the Minister of Labour stated that tuberculous patients are to be included in the Government's scheme for the training and resettlement of disabled persons. This decision marks a great advance on present arrangements for dealing with

the problem of the tuberculous, which so frequently break down when a patient is discharged from sanatorium fit only for part-time work but requiring a wage sufficient for good food and adequate housing accommodation. For the new scheme to be effective it will be essential for the patients' earning to be made up to a satisfactory living wage ; if this is not done patients will continue to attempt full work before fit to do so, and will in consequence relapse.

The present is clearly the right moment for starting such a scheme, as even part-time workers are of value in industry—e.g., married women. Payments to supplement wages would no doubt be costly to the State, but if they resulted in a considerable reduction in cases relapsing an appreciable saving would follow. The problem is closely linked with the future application of mass radiography to industry, which appears to be the only means whereby cases can be diagnosed early enough for the great majority, instead of only a minority, to be returned as useful members of society. Unless the economic penalty attached to this, the most important disease of young adults, is removed organized labour will continue to oppose mass radiological diagnosis in industry.—I am, etc.,

London, W.1. ANDREW MORLAND, M.D., F.R.C.P.

Increase of Tuberculosis

SIR,—The discussion has continued for a considerable time as to whether adult pulmonary tuberculosis is caused by a new infection from without or by a reactivation of the infection acquired in earlier life. The recent correspondence in the *Journal* reminds us that the question is not yet settled, and Dr. V. S. Hodson (January 17, p. 89) contributes an interesting letter in support of the endogenous theory. I should like, if I may, to carry his argument a step further.

When a patient recovers from an infective disease and when the resulting immunity subsequently disappears any future manifestation of the disease would seem to be due to a fresh infection from outside (erysipelas, influenza). When recovery occurs from an infective disease and when the resulting immunity persists a fresh infection cannot become established ; any future manifestation of the disease would then seem to be due to a recrudescence of the original infection which had been latent in the body (syphilis, trypanosomiasis). The average adult in this country has recovered from the infective disease, tuberculosis, as shown by the healed primary complex of childhood ; the resulting immunity persists, as shown by a positive tuberculin test. By analogy, then, one would suppose that the later appearance of pulmonary tuberculosis of adult type should be due to a recrudescence of the original infection, any other explanation being contrary to the known laws of pathology. This deduction, with a certain amount of objective evidence, leads to the endogenous theory which we all know.

On the other hand, it is established beyond all reasonable doubt that pulmonary tuberculosis is a good deal commoner among contacts than among non-contacts. It seems impossible to avoid the conclusion that the sputum-positive patient must, in some way, be involved in the production of new cases. The exogenous theory claims that new cases arise by contact infection from pre-existing ones.

There is a widespread feeling that the two theories are mutually exclusive and cannot both be true, but personally I do not think that this is justified. There is the well-known suggestion that one mechanism may operate in some cases and the second in the remainder. But there is another possible mechanism which, to my mind, unites the two points of view in a neater and more satisfying way. We know that the apparently healed primary complex of childhood often contains tubercle bacilli, which may remain viable for years or even for life. We also know that a large dose of antigen—e.g., a massive dose of tuberculin—can reactivate such a lesion. Could not massive contact infection have the same effect ? Could not tubercle bacilli, conveyed from the consumptive to the contact, reactivate the latter's old lesion if his resistance happened to be low? If this is so, it would indicate that adult pulmonary tuberculosis is due to reactivation of the old lesion, such reactivation being precipitated by: (1) lowering of resistance by mental, physical, and dietetic stress, and the other factors mentioned by Dr. Hodson ; or (2) a massive dose of antigen—i.e., contact infection.

It may well be that the suggestion is not new, though I do not remember having read or heard of it elsewhere. Perhaps some of your readers will be good enough to indicate their views of it.—I am, etc.,

Westminster, S.W.1. LAWRENCE ROBERTS.

Cyclic Recurrences of Herpes, Influenza, and Cancer

SIR,—References were made in the *Journal* (1941, **1**, 135, 337) to recurrent attacks of herpes, but there was no discussion of the periods. This should be of interest when compared with cyclic signs of disease in influenza and cancer. Recently I have noted some dates in a patient who has had recurrent attacks of herpes labialis for many years. They began on October 24, November 19, and January 1 ; while influenza in the same patient began on October 27, November 23, and January 13, the intervals being 26 to 27 days, 42 days, and 51 days. A second patient had a return of the same influenzal cold after an interval of six weeks exactly (November 29 and January 10). A third patient had a cold beginning on October 24, relapsing on November 14, and again on January 20 (intervals being 3 weeks and 9½ weeks).

Three-weekly cycles are characteristic of the Pel-Ebstein type of Hodgkin's disease, and have been noted by me as occurring very rarely in some neoplastic cases (Webster, *Periodicity and Cause of Cancer*, 1940, 80). The reactions from diketal injections often follow a three-weekly cycle (especially in persons subject to influenza).

The periods found in herpes, influenza, and cancer group themselves into: (1) those following the 26- to 28-day menstrual rhythm ; (2) those following a three-weekly cycle ; and (3) those of the main full period for influenza and cancer of 33 weeks (plus or minus three weeks) and its subperiods and multiples (Webster, *British Medical Journal*, 1940, **2**, 808 ; *Edinb. med. J.*, 1939, **46**, 591). The periodicity is probably due to the interaction of the two factors—the patient's resistance and the virus infection activity ; the former having a cycle of heightened and lowered resistance of 26 to 28 days, and the latter (it is now suggested) tending to have three-weekly cycles more marked. Cycles are probably based physically on the solar average rotation and its subperiods and multiples.

The usually latent cyclical signs at "quarter-periods" (? due to virus activity or to the host's resistance) have been reported in blood changes in many cancer patients by O. C. Gruner (*Canad. med. Ass. J.*, 1941, **44**, 256). If confirmed, his Fig. 5 would be of the greatest interest, as one could determine the "phase" of the period of any new cancer patient by blood examination. My preliminary studies of twenty-six cancer patients confirm in part some of Gruner's work, as regards cyclical changes in the mitochondrial activity in the leucocytes in cancer. Further work on these and other obscure features of periodicity would be likely to help in cancer towards the aims of prediction and prevention of recurrences, in which direction some steps have already been taken.—I am, etc.,

London, W.1. J. H. DOUGLAS WEBSTER.

Regional Anaesthesia

SIR,—I think it would be a pity if the criticism which has appeared in the *Journal* of the article by Dr. N. R. James and Mr. H. W. Burge on an improved method of regional anaesthesia in acute abdominal surgery (December 27, p. 906) should dissuade anaesthetists from learning the technique in question. What matters in any anaesthetic method is whether it is an improvement on previous methods with regard to the patient's general safety and ability to withstand surgical trauma.

I have watched this technique in action and have employed it myself. As an observer with experience of general and regional anaesthetics (including spinal), I think that this method does cause less anxiety, when dealing with very toxic and ill patients, than other methods with which I am familiar, and does, I feel, give such patients a better chance of survival. That is sufficient to recommend it to me for further trial.

I am inclined to doubt the necessity of the splanchnic block for most abdominal procedures with careful and gentle surgeons. If this is omitted the technique is relatively simple, though careful attention to detail is necessary.—I am, etc.,

Oxford. F. K. BOSTON.

Typhus Fever

SIR,—Typhus fever in Europe, especially in the east of Europe, is now a topical subject (see *British Medical Journal*, 1941, **2**, 817, and *Proc. roy. Soc. Med.*, 1941, **35**, 141). May I be allowed to contribute a few remarks to the discussion.

I

In the demonstration on typhus by Dr. M. D. Mackenzie a chart is shown at page 145 of the *Proceedings* which gives a curve of the monthly incidence of typhus cases in Poland from 1930 to 1936. The curve invariably rises each year from November or December on to a peak in April or May, falling rapidly in June on to the lowest level in September and October. This is not a chance happening in that particular country, as reports from Yugoslavia on the monthly figures of notified typhus cases during the years 1922 to 1925 reveal: this country then had a population of over 12 millions, and 1,548 cases of typhus were notified in a period of seven half-years (three and a half years), with 147 fatalities. The monthly returns available to me show the peak of the figures for 1923 in the months March, 66 cases; April, 71; May, 69. The lowest numbers are in August, 6 cases; September, 1; October, 2. Then the figures rise to 10 in November and 34 in December. In 1924 the peak of the curve is in May with 61 cases and the bottom in September with 2 cases, a new peak being reached in May, 1925, with 107 cases. For every half-year 221 cases with 21 deaths were to be expected, the average mortality rate being 9.5%. Instead of that the figures are as follows:

Six-monthly Period	1923			1924			1925		
	Cases	Deaths	Mortality	Cases	Deaths	Mortality	Cases	Deaths	Mortality
January–June	289	48	16·6%	249	15	6·6%	345	50	14·5%
July–December	63	1	1·5%	70	7	10%	—	—	—

The figures become even clearer if the winter and spring months December to May are compared with the figures during the summer and autumn months of June to November.

I think that M. D. Mackenzie was right when he stressed the importance of the food problem in the fight against the epidemic spread of typhus. Exanthematic typhus is often called hunger typhus, jail typhus, or war typhus. In all these conditions as well as in the seasonal distribution there is a hint that lack of protective vitamins in the food is one of the factors contributing to an epidemic spread, as in other infectious conditions. Rich vitamin supply in summer and autumn may be responsible for the lower figures in this part of the year, and lack of vitamins in winter and spring for the greater susceptibility of the population at these times.

The first practical conclusion would be to supply the population with an additional dose of the essential vitamins, which at least in dangerous times like war should be made available free of charge during the months November to May. This should be compulsory for soldiers or others likely to be exposed to the infection in danger areas, and for the staff of fever hospitals who would have to attend to typhus cases.

II

It was established in the last war that only the body louse (*Pediculus vestimenti*) is able to transmit the causative Rickettsia virus, and not the head louse (*P. capitis*) or pubic louse (*Phthirius pubis*). The virus is in the patient's blood only during the fever period and not during the incubation time or in convalescence. In the stomach of infected lice it undergoes a development lasting four to six days before it is infectious and can be transmitted into another human being by the bite of a louse. Nits are not infectious. The opportunity of infection is thus limited to lice which have sucked a typhus patient's blood in his fever period at least four to six days before. In the last war Jürgens kept carefully deloused typhus patients in reliably deloused fever wards together with other patients and saw no contact infection occur, not even when he purposely used their soiled beddings in order to prove that no transmission is possible without the lice, of which he was firmly convinced.

Perfect delousing, however, was often a difficult problem, as I experienced in the case of a young Polish labourer who fell ill with typhus and died shortly after his arrival in Sarrebourg. He had been deloused, shaved, and cleaned before he entered the hospital, and we never discovered lice while he was ill. In spite of that, lice were observed to leave the cooling body after his death. This is a common observation, and probably accounts for the superstition in the East European peasant population that "lice are healthy, and that it may lead to death when the lice were removed."

Body lice are different from head lice in size, from pubic lice in shape and appearance. They should better be called *P. vestimenti*, as they have the unpleasant habit of sticking to any bits of clothing or wool in the bedding, thus facilitating the spread from one person to another. The burning of suspected lice-infested rags and hot-ironing of linen and clothing at frequent intervals are therefore to be recommended, especially when proper delousing is not possible.

The second practical conclusion is that, apart from thorough delousing, troops and public should be properly enlightened about the danger and habits of lice and the ways to fight them. Hospital staffs, troops, and the public should be shown a good teaching film illustrating the subject. Staffs of fever hospitals should have instructions by medical officers with practical experience in the subject, in order that they should neither underrate nor overrate the dangers of contact, the latter being particularly bad for their own peace of mind and for the welfare of their patients.

III

The fact that the inhabitants of countries with endemic typhus show a lower mortality rate than newcomers is to a great part explained by the other facts that younger people are in less danger than the older and that typhus produces lasting immunity. Children in these countries are very often immune after a very light attack of the disease, and it would be interesting to explore the mortality rate in age groups of the population. We considered people over 35 to be in greater danger than those younger than this, and found infections in newcomers over 50 nearly always fatal.

I have no experience with Weigl's active immunization, but I had prophylactic injections with whole blood from convalescent patients given to me in the last war, 1 c.cm., 2 c.cm., and 3 c.cm. at intervals of three to four days. A Turkish medical officer, Hamdi, had published a paper in which he recorded the fact that an insane doctor injected infectious blood from typhus cases into 316 persons, 56% of whom became ill, whereas the others were immune.

A third practical conclusion should be that immune people should be enlisted as doctors and nurses wherever possible. Otherwise, young, healthy, and vitamin-protected nurses and doctors should be well instructed and kept on a list of volunteers for this job.

IV

An early diagnosis after the proper delousing and cleaning of a suspicious case is of great importance. The onset and course of the temperature curve are absolutely different from those in typhoid fever, and so is the type of the skin eruption later on. In typhus the temperature climbs quickly to a high level, where it stays, instead of the slow escalator rise in typhoid fever. There is a blood leucopenia in typhoid, a mild leucocytosis in typhus. Bacilli are always to be cultured from the blood in the first stage of typhoid, and the roseola generally starts from the abdomen. The roseola in paratyphoid can sometimes be more like that in typhus, but the nervous signs and symptoms are then missing or less severe. The roseola in the palms of hands and feet is not found in typhoid, but is in typhus. The differential diagnosis from a septic meningococcal meningitis with skin eruptions can be very difficult, and sometimes only possible by examination of cerebrospinal fluid or by the Weil-Felix test.

Biopsy of skin lesions, particularly the histological picture of periarteriolitis nodosa and the characteristic infiltration round

the smallest arteries in skin, brain, or other organs (E. Fraenkel) in the post-mortem examination of doubtful cases were often found helpful in diagnosis. Mistakes after the fifth to seventh day are unlikely when the reliably specific O-X 19 agglutination test (Weil-Felix) is carried out as a routine in doubtful cases.

When I was in charge of a fever ward after the last war and attended a number of Russian emigrants with typhus, I suddenly fell ill with a temperature of 42° C. (107° F.) and an enlarged spleen. The Weil-Felix reaction was found to be positive up to a serum dilution of 1 in 1,200, but of the fine H-X 19 type. I recovered quickly and found cold wet packings with linen sheets a good and agreeable method to lower the temperature. None of the other signs of typhus was observed. The significance of the rough O agglutination with heated bacillary emultions (Sachs, H., *Dtsch. med. Wschr.*, 1917, No. 31) was then not yet fully appreciated. It remains open to conjecture whether this was a mild abortive form of typhus or whether the reaction was misleading, either of these possibly attributable to my previous inoculation with typhus convalescent blood three years before.

The clinical picture, especially the characteristic temperature curve, the grave nervous signs and symptoms, and the mild leucocytosis allow the correct diagnosis at the beginning. This is later on confirmed by the typical skin eruption and the positive O-X 19 Weil-Felix reaction. In case of doubt bioptic or post-mortem histological examination of the lesions in the skin or in other organs can be of value.

The Weil-Felix reaction must be of the rough O-X 19 type with specially prepared emulsions.—I am, etc.,

Luxton. E. M. FRAENKEL.

Prophylactic Ultra-violet Light

SIR,—Further to my letter in the *Journal* of November 23, 1940 (p. 723), I think the following facts may be of interest to those who are concerned with the welfare of any bodies of workers, either military or civil. The nature of the establishment in which these figures were obtained cannot be disclosed at the moment for obvious reasons.

Ultra-violet treatment was instituted in February, 1940. A record has been kept of all persons who had prophylactic treatment and of the number of times that these people reported for treatment for respiratory infections. It is obvious that, during wartime, "reporting sick" is the only standard for estimating the incidence of respiratory infections. A parallel record was kept of untreated personnel. In view of the marked difference for the two periods one wondered whether there had been an improvement in the general health of the community: figures were therefore obtained for similar establishments; it then appeared that there had been a definite increase in respiratory disease elsewhere. I do not propose entering into the theory of the prophylactic use of ultra-violet light in this letter but merely to give the figures for two comparable periods in the same establishment and to compare them with figures for similar establishments. It is not claimed that the improvement is entirely due to the effects of the ultra-violet treatment, but it does appear that the difference is so great that it is fair to attach some significance to the treatment.

	Complement	Cases	Per Cent	Days Sick	Days per Case	Days Sick per 100 Men
A. 1939 ..	715	25	3·5	207	8·3	38·0
A. 1940 ..	577	14	2·4	91	6·5	15·8
B. 1939 ..	1,859	49	2·63	328	6·7	17·8
B. 1940 ..	1,443	75	5·23	485	6·5	34·8
C. 1940 ..	440	13	2·96	93	7·16	21·2

A=Figures from establishments where U.V.L. available.
B=Figures from establishments with no U.V.L.
C=Figures from establishment with no U.V.L. which did not exist in 1939.

Since these comparative tables were compiled the treatment has been continued, and to date some 15,000 treatments have been administered to 1,800 individuals with only two accidents—both conjunctivitis, due to improper use of goggles. The apparatus consists of a "centrosol" lamp combined with four "sollux" lamps. The "centrosol" is placed in the centre of the room with the "sollux" lamps suspended in the corners. Two concentric circles were painted on the floor of four and five feet radius respectively: the "sollux" lamps were suspended nine feet from the "centrosol." The men strip to the waist, or, if they prefer it, they strip completely and stand between the two circles. They face the lamp for four minutes and then turn their backs for a further four minutes. Including undressing and dressing, changing-over, etc., a party of fourteen to sixteen can be dealt with in about twelve minutes, which gives a rate of eighty to ninety per hour with one attendant.

The treatment was given twice weekly throughout the year. It was noteworthy that the attendance of officers fell off during the summer months, but with the coming of autumn they commenced treatment again without any propaganda.

Comparing A and B it is noted that: (1) percentage incidence in A was higher than in B in 1939, but in 1940 A was only 42% of B; (2) duration of sickness in A in 1940 was 78% of that in 1939, but almost identical with that in B in both years: (3) days sick per hundred men per quarter in A in 1940 was only 41.5% of that in 1939, while in B it was almost 100% higher.

Comparing A with C in 1940 (two almost identical establishments): (1) incidence in A is 81% of that in C; (2) duration of sickness in A is 90% of that in C; (3) days sick per 100 men in A was 75% of that in C.

A further interesting fact is the following: A record was kept over a period of ten months of personnel receiving prophylactic treatment and their incidence of infection. A record was also kept of those not receiving treatment: number of persons receiving treatment, 859; incidence of respiratory infection, 19, or 2.2%; number of persons not receiving treatment, 210; incidence of respiratory infection, 26, or 13.6%. This gives a reduction of 69% in the expected number. It is not claimed that these latter figures are scientifically correct, as the men were not in impartially selected groups, but the figures are for all persons passing through the establishment. Even allowing for this modification the figures are considered extremely significant.

One can only conclude that prophylactic ultra-violet light treatment is of great value to all who are working under wartime conditions. It provides not only a reduction in the incidence of respiratory disease, but also an increase in general efficiency, with a great reduction in time lost.—I am, etc.,

PHILIP H. DALGLEISH,
Surgeon Lieut. R.N.V.R.

Synergic Effect of Vitamins

SIR,—The *Journal* of January 17 contains a leading article and an annotation immediately following it which, though on totally different subjects—vitamin B and quinine—are curiously similar in outlook, and that outlook not the usual one. The leader urges roughly the importance of the vitamin B complex as a whole, the annotation the value of the cinchona alkaloids as a group. The modern tendency is to stress the importance of single members of complexes or groups; and certainly we cannot know too much about the independent action of individual substances. There seem, however, grounds for believing that some clinical effects are hardly explicable in terms of the individual members, or at least of their actions as at present known, and that the action of certain substances occurring in association in Nature may have some synergic effect also. the whole being greater than the sum of its parts. Digitalis and ergot are two other much-investigated substances of which this may be true.

This is not a plea for obscurantism or a blunderbuss prescription—though in our present state of ignorance the latter may at times be justifiable—but the prelude to a suggestion that vitamins A and D may also be a "complex," working together more than either can do separately. For the past twelve years I have been giving these vitamins in largish doses by intramuscular injection in a variety of morbid conditions, and I am convinced that the clinical results observable, which can be repeated at will, cannot be wholly explained by the present ideas of their action—not that I claim to know all the latest opinions. I was, however, interested to see in a recent leader in the *Times* on "Health in Winter" references to vitamin D which seem to credit it with an influence on health more general than that

usually recognized. With this view my experience strongly agrees.

It is a risky thing to try to argue from clinical observation to ultramicroscopic cytology, but the idea I would like to put forward is that just as vitamin C has a special influence on intracellular substance, and the vitamin B complex on nervous tissue, so the vitamin A and D complex has a specific action on the integrity of the cell wall, and thus controls the proper functioning of its semipermeable membrane. Crudely put—for the intricacies of colloidal and physical chemistry are beyond most of us—I suggest that in the absence of sufficient supplies of both vitamins A and D the cell wall becomes lax, the interstices in it larger, fluid will tend to be lost, the entrance of large or awkwardly shaped toxic molecules facilitated, with flaccidity and disease as a result. A similar temporary action presumably takes place in the cells lining the capillaries in primary shock as a result of a physical dilatation due to nervous stimuli. Unless this suddenly stretched but previously healthy cell wall is rapidly restored to normal its "elasticity" is lost and the condition will pass into secondary shock, the chemical constitution of the cells will begin to alter, and changes begin which may prove irreversible, leading to disruption of the protoplasm and to death.

If this hypothesis is in any way correct, we should expect to find that liberal dosage with vitamins A and D should tend to prevent the onset of shock, particularly of secondary shock, to prevent dehydration, and to improve the health of the tissues in morbid conditions, even though the morbid condition itself was not controlled—that is, it should enable the cells to live healthily, even though the body fluids were toxic, by restoring to the cell walls their function of gas mask or Berkefeld filter. It is because I have observed just these things to happen clinically after injections of vitamins A and D (dekadexolin), and have not seen them to anything like the same extent after injections of either of the vitamins separately, that I venture to put forward the suggestion that vitamins A and D form a real complex with possibly an action such as I have envisaged.—I am, etc.,

Winsford, Cheshire. W. N. LEAK.

Haemoglobinometry

SIR,—As a laboratory worker having to carry out a fair number of blood counts I have been very interested in the recent correspondence on haemoglobinometry. At this hospital we get patients from all parts of the country and from all over the world, and, consequently, we have seen a striking variation at times in Hb percentages estimated independently in various places. In some cases the variation has been sufficient to throw "the colour index, that corner-stone of haematological diagnosis," as Dr. R. D. Campbell (January 17, p. 88) puts it, from a secondary to that of a primary anaemia. A case in point came up only this morning. A patient had a red cell count of 3,500,000 per c.mm. and 10.2 grammes Hb per 100 c.cm. of blood. According to Haldane's method the Hb equals approximately 73% and according to Sahli's method it equals approximately 60%, figures from which colour indices of 1.1 and 0.85 respectively can be calculated. What is one to do in such a case?

In order to obtain some uniformity in my own haemoglobinometry I tried out in comparison most of the popular methods, and finally I adopted the Hellige orthohaemometer as a practical method of choice. This simple comparator has a five-minute dilution time, and estimates in terms of real gramme oxyhaemoglobin per 100 c.cm. of blood. Having obtained Hb in grammes by means of a simple graph it is easy to convert to percentage in terms of any scale desired. For my own use I selected a figure of 15.5 grammes Hb per 100 c.cm. of blood, which is the mean average between Sahli at 17.2 grammes and Haldane at 13.8 grammes. I have used this figure now for four years, and it appears to give colour indices not incompatible with normal and pathological bloods. This, however, is an arbitrary figure, and I, like many others, would be grateful for more accurate information and guidance on haemoglobinometry.—I am, etc.,

A. H. WALTERS,

London, E.16. Pathological Department, Albert Dock Hospital.

Birth of the Head in Breech Delivery

SIR,—In his article on breech delivery (January 24, p. 105) Dr. L. G. Higgins described what he called "a life-saving procedure" if there is difficulty with the delivery of the head when it is on the pelvic floor and, by chance, the forceps are forgotten. For several years now I have used this method for delivering the head in extension, only using forceps on extremely rare occasions when the manœuvre was unsuccessful. The legs are held upwards, as described, and firm but gentle fundal pressure is applied. The chin and mouth are born in this way and the child can breathe with the rest of the head in the vagina. Anxiety regarding the foetus is lessened, and the rest of the head can be delivered slowly by a continuance of the fundal pressure.

I have had two cases of breech delivery (one the first baby of twins) in primigravidae during this past week, and on both occasions the infant was breathing regularly before the rest of the head was delivered. This manœuvre, in my opinion, reduces the number of cases of cerebral haemorrhage during delivery.—I am, etc.,

MARY WATSON, M.B.,
Assistant Medical Officer, Fulham Borough Council.

Professional Secrecy

SIR,—Having been a military psychiatrist in the last war with vast experience in dealing with malingerers in the psychiatric field, I should like to make a few remarks regarding Dr. Neustatter's letter (January 17, p. 93).

A soldier who claimed loss of memory for absenteeism was subjected to evipan treatment and convicted of malingering after it had been promised to him that whatever he revealed in the narcohypnotic state would be strictly confidential. In the *Journal's* comment it was suggested that such promises should be accompanied by a statement that in case of subpoena the doctor would have to disclose the knowledge obtained to a court-martial in spite of the promise given. I doubt whether the doctor is allowed to give even this limited promise, as, in case malingering should be proved, the doctor would have committed himself to abetting. Anyway, it is not for the doctor to decide whether or not prosecution shall take place. But if, unfortunately, promises not to disclose any evidence of malingering to the military authorities have been given, they should be kept, whatever the consequences.

As to the evipan treatment, was it given for curative or diagnostic purposes? Apparently both parties were convinced that there was nothing to be cured. A patient with a good conscience would insist that whatever he discloses in the narcohypnotic state would prove nothing against him. This being perfectly true, it is difficult to see what can be gained by the treatment, even as a means of obtaining information. Whatever is revealed, the one important question, whether the man is a malingerer or a neurotic, cannot be answered from these revelations. It is true the man has been convicted in the course of the treatment; but not owing to the contents of his disclosures: rather due to a confession brought about by the pressure which the treatment exercised upon him, and to a certain extent due to the promise given that nothing would be reported to the military authorities. I wonder whether using drugs for the purpose of enforcing a confession is a lawful procedure. And if it should be, no doubt other efficient means are available for exercising pressure. Furthermore, had the psychiatrist known, first, that the promise given was of no avail, and, secondly, that the court-martial would refuse evidence obtained by use of drugs, he would have seen that the whole procedure was superfluous. Even if other methods should fail to bring about a confession, there is always sufficient evidence available to form a judgment whether or not a pathological condition exists.

The publicity which the case received in the daily press is for obvious reasons deplorable.—I am, etc.,

London, N.W.11. B. C. SAALER.

White and Brown Bread

SIR,—After reading the timely and effective letter of Dr. R. A. Murray Scott (January 24, p. 125) a nasty taste is left in the mouth, and it doesn't come from the wholemeal loaf. The implication in the letter is that political considerations are being allowed to prevent a full and accurate statement of the facts concerning the relative value of white and brown bread being placed before the public. Can Prof. Drummond reassure us on this point?—I am, etc.,

London, W.1. FREDERICK DILLON.

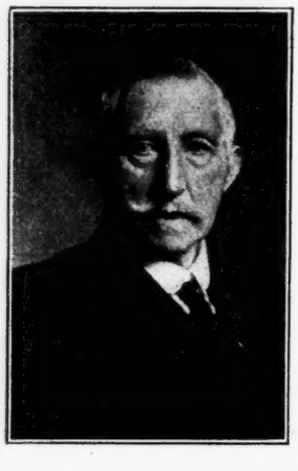
Obituary

A. K. CHALMERS, M.D., LL.D.

Formerly Medical Officer of Health, Glasgow

We regret to record the death of Dr. A. K. Chalmers, medical officer of health for Glasgow for thirty-three years, which took place at Bridge-of-Weir on January 24. He was in his eighty-sixth year.

Archibald Kerr Chalmers was a native of Greenock and spent the whole of his life on Clydeside. He was educated at Glasgow University and qualified in medicine in 1879, proceeding to the M.D. in 1887. He entered the service of Glasgow Corporation, and from 1892 to 1898 jointly held the office of medical officer for the city with Dr. J. B. Russell, taking over full control in 1898 when Dr. Russell joined the Scottish Board of Health. Glasgow in those days, with a population of above three-quarters of a million, offered great opportunity for enterprising health administration, and many sanitary improvements were effected, including a scheme for dealing with insanitary and congested areas in the centre of the city and on the south side of the river; also a remodelling of the drainage system. Dr. Chalmers had to deal with various epidemic outbreaks, particularly bubonic plague and small-pox, and with the co-operation of an efficient staff successfully combated them. With his labours as medical officer for the city he combined from 1904 onwards those of medical officer for the port local authority, and continued to hold the two offices until his retirement in May, 1925, when he was just upon 70 years of age.



It was not merely because he was medical officer for the second city of Great Britain and for one of the largest seaports, but because of his own character and capacity, that he came into prominence both in connexion with official health policy in Scotland and in the councils of his profession. He was one of the first members of the Consultative Council of Medical and Allied Services, set up by the Scottish Department of Health in 1920 to correspond with the council in England, and he served for a number of years on the General Nursing Council and the Central Midwives Board for Scotland. In 1907 he was a member of a commission appointed to consider health conditions in Belfast. He served as examiner for the Cambridge D.P.H., and assessor for the examinations in medicine, medical jurisprudence, and public health at the Universities of Aberdeen, St. Andrews, and Liverpool, and, in public health, at his own University of Glasgow and the Conjoint Board for Scotland. In 1898 he was president of the Royal Sanitary Association of Scotland, in 1913 of the Society of Medical Officers of Health, and in 1920 of the Section of Epidemiology and State Medicine at the Royal Society of Medicine.

Dr. Chalmers employed his pen very largely on public health questions, especially as related to Glasgow. After his retirement he published a history of the health of the royal burgh during the previous hundred years. Many of his papers, on the function of the isolation hospital, on the relevance of death rates to housing conditions, and other subjects, will be found in the proceedings of the Royal Sanitary Institute, the Royal Institute of Public Health, and other bodies of which he was a Fellow. His Watsonian Lectures before the Royal Faculty of Physicians and Surgeons of Edinburgh were published under the title *Epidemic Diseases of the Central Nervous System.*

He joined the British Medical Association in 1888, and was president of the Section of State Medicine and Industrial Diseases at the Annual Meeting at Liverpool in 1912, and of the Section of Public Health at the Annual Meeting at Glasgow in 1922. At the Centenary Meeting in 1932 he was vice-president of the Section. For four years he was a member of the Scottish Committee of the Association, and for four years more of the Public Health Committee—a very quiet but effective member—and he was at the head of the Glasgow representation at almost all the Annual Representative Meetings from 1929 to 1936.

On his retirement from public office in Glasgow his university conferred on Dr. Chalmers its LL.D. (*honoris causa*). In 1932 he was made Honorary Fellow of the Royal Faculty. He was the holder of the Médaille du Roi Albert of Belgium, and he had Volunteer and Territorial officers' decorations, having served as lieut.-colonel R.A.M.C.(T.).

Dr. Chalmers had all the fine Scots qualities of resoluteness, diligence, conscientiousness, deep seriousness, and although, like so many Scotsmen of his "pairts," he stayed in his native land and made his career there, his reputation as a sanitarian, an administrator, and an authority on State medicine was fully established south as well as north of the Border.

[The photograph reproduced is by Elliott and Fry, Ltd.]

A. KEITH GIBSON, M.B., Ch.B.

Major, R.A.M.C.; Regional Secretary, B.M.A.

We have to announce with deep regret that news has reached this country of the death on active service of Dr. A. Keith Gibson, who was appointed Regional Secretary for the London Area of the British Medical Association in January, 1937. At the end of 1939 Dr. Gibson left B.M.A. House to rejoin the R.A.M.C. with a temporary commission, and was acting as registrar of the military hospital to which he was attached, with the rank of major, when he fell into the enemy's hands at the time of the Dunkirk evacuation. He died of typhus fever contracted while attending Russian prisoners of war in Germany.

Arthur Keith Gibson studied medicine at the University of Edinburgh, and graduated M.B., Ch.B. in June, 1916. At Edinburgh he held the posts of house-surgeon at the Royal Infirmary and house-physician to the gynaecological wards. For the next three years he served in the R.A.M.C. Special Reserve, reaching the rank of captain. He settled in general practice in London soon after the last war and began to take an active part in the local work of the British Medical Association and to interest himself in medical politics and administration. He became one of the leading spirits of the Kensington Division, and held office as its honorary secretary from 1929 to 1932. Then for three years he undertook the duties of joint honorary secretary of the Metropolitan Counties Branch, and threw himself into this with characteristic zeal and industry. Before joining the secretariat five years ago he had served at headquarters on the Public Medical Services Subcommittee, the Medico-Political Committee, and the Contract Practice Subcommittee, and in each of these his enthusiasm and mastery of detail won general appreciation. He was one of the representatives of the Kensington Division at four Annual Representative Meetings of the Association, and often spoke from the platform on subjects which he had made his own.

Gibson worked hard as the first Regional Secretary to be appointed by the Council in England. He knew that it was looked upon by many people as an experimental post, and that its continuance would depend to a large extent upon his own initiative and seamanship in uncharted waters. This gave a strong stimulus to him to prove his capacity in a wider sphere of medical organization. It is sad indeed that the war broke into his new work so soon, and that a man of energy and unbounded good will has now been cut off in his prime while humanely attending sick prisoners in a German camp. His colleagues salute the memory of a public-spirited doctor and a good companion.

A LONDON DOCTOR writes: In Keith Gibson the medical profession has lost—all too soon—a unique personality. Whatever the sphere of his work—the Kensington Division, the Panel Committee, the London Public Medical Service, or the Metropolitan Counties Branch—he displayed a combination of tremendous energy, of immense fertility of ideas, and of a most minute attention to detail. Nothing, in Gibson's view,

was so good that it couldn't be better, and he was prepared to improve almost everything with which he came in contact. Far, however, from being a hazy visionary, he would sit down to study the problem, formulate his plans, and then discuss them with two or three colleagues over the telephone at great length and from every aspect. (Someone once said that Bell invented the telephone but Gibson showed how to use it.)

Gibson's work as secretary of the Metropolitan Counties Branch (which was just getting under way when the war broke out) was founded on very simple principles: "If you want to get London doctors to join the B.M.A. you must show them what the B.M.A. is doing in London, and before you can show what the B.M.A. is doing you must first make sure that it is doing things." It is a tragedy that one who might have done so much has been called away from tasks sketched out but hardly commenced.

Dr. HORACE A. NATHAN writes from Epsom: It is with aching heart that I sit down to pen this last tribute to one who will be sorely missed. Keith Gibson, the trusty friend, adviser, and helper to the Divisional Secretaries throughout the Metropolis, and to none so appreciative of his work as myself, has now passed over. A man of sterling quality, of great resource and indefatigable energy, he joined the staff of the Association in a difficult phase of medical politics. The transition from the easy-going Edwardian period to the pre-war times when things were becoming difficult for the family doctor required men of the Gibson type to weld the old and the new together. The advent of the London Public Medical Service, with new ideas which were not only foreign to an older generation but were regarded with suspicion by the new, required an able exponent of this change in doctrine. This man was a pioneer in the new medico-political firmament, making many new friends but never any real enemies. My old constituency, Kensington, will for ever remember a great man, a loyal friend, who gave all to the cause of the family doctor, never sparing himself in the pursuit of what he considered right in their interests, regularly working far into the night, preparing the solution of the new day's problems. The Association has lost one of its distinguished workers, and the deep sympathy of the profession he loved so dearly will go out to his widow and children in their terrible bereavement.

MAITLAND SCOTT, M.B., B.S.

Dr. Maitland Scott of Bournemouth died suddenly on January 2, aged 54. His loss will be keenly felt by a host of colleagues, friends, and patients. He was the eldest son of the late Dr. Bernard Scott and of Mrs. Scott of Bournemouth and nephew of the late Dr. Thomas Bodley Scott and Sir Gilbert Scott.

He was educated privately and entered Guy's Hospital for the medical curriculum. He qualified as M.R.C.S., L.R.C.P. in 1912. After this he took the post of resident house-surgeon at the Royal Victoria and West Hants Hospital, Bournemouth; later he went to Duff House, Banff, as assistant physician for two years. At the outbreak of the war of 1914-18 he joined the R.A.M.C. and served as medical officer to the Norfolkshire Regiment in France for more than two years, and was awarded the Italian Order of Gallantry. Then he was posted to the 39th Stationary Hospital, B.E.F., and remained with that unit until demobilization in 1919. In addition to the ordinary duties of medical officer, he took special interest in chest cases. He made many friends during the war, and these friendships, which were continued afterwards, were some of his happiest memories. On returning after the war he took the M.B., B.S.Lond. degrees, and then settled in Bournemouth as partner to his father, and soon became fully occupied with his work. He also served the Royal Victoria and West Hants Hospital as assistant anaesthetist and assistant physician. Among his colleagues he was recognized as a doctor of undoubted knowledge and ability and an example of what a general practitioner should be. His leanings were towards medicine rather than surgery, and his clinical acumen was based on a sound knowledge of medical literature and a good brain.

To his patients he was the ideal doctor; apart from his skill and sympathetic understanding due to intense study of human psychology, he was always their friend in need, never failing to answer a call no matter how far the journey or whatever the hour. Patients always came first; therefore his own holidays were curtailed, which was no doubt a great tax on his health and endurance. To his friends he was the one and only "Scottie," always the same cheerful and interesting personality. For recreation he was fond of the sea and steamship cruises; he was a good swimmer and an average lawn tennis player; he was a very good bridge player. He lived simply and very happily in his family circle, but when occasion arose he enjoyed a club or society dinner. He read a lot and was very well versed in literature. His cheerful and friendly nature endeared him to all his friends, who could not fail to be inspired by his loyalty to them and his faith in his fellow men. Truly a man who could ill be spared. Our sympathy is with his widow, who played a great part in his life; also with her daughter, aged 15, and son, aged 12 years.

S. G. L.

Dr. FRANCIS ROWLAND HUMPHREYS was born in 1860 in Co. Cork, and was educated at Malvern College, Brussels, Wiesbaden University, and Guy's Hospital. He took the English Conjoint diplomas and the L.S.A., and settled in Hampstead, where in the midst of a large general practice he also found time for much public work. In this direction he took an active part in sponsoring the promotion of a Bill in Parliament for the registration of midwives, serving on the committee formed for this purpose till its completion, when a presentation of a gold watch was made to him in recognition of his services. He also devoted much time and energy towards obtaining improvement in the Poor Law. Dr. Humphreys was the first general practitioner to be elected chairman of the Hunterian Society, of which he was a member for over thirty years. His oration dealt with renal disease. A Volunteer in early life, he later became a member of the Territorial Force, and in 1914 was mobilized, serving in the R.A.M.C. until 1924. During the earlier years of this period his capabilities in lecturing and active training of the men were highly appreciated. From 1918 to 1924 he was senior medical officer to an R.A.F. camp. In other directions his work included at one time the annual examination of nurses training at the London Hospital, the writing of an article monthly for *Nursing Notes* over a long period, and the compilation of a brochure on the protection of the civil population against poisoning by gas from the air in time of war, adopted and published by the St. John Ambulance Association, with which he was associated for many years. He was also a member of the B.M.A. since the early days of his professional life. After retirement from active practice he interested himself in the thunderstorm census, obtaining a considerable amount of data; but in his opinion the performance of a post-mortem examination in all cases of death from lightning-stroke was desirable, in that it might yield evidence of lesions hitherto unknown in this connexion and enlarge our knowledge of the subject. Dr. Humphreys was a man of very high ideals, entirely unselfish, always ready to give of his best in the interests of others and to lend a helping hand in any direction. His courtesy and kindliness won for him many life-long friends, and all felt it a privilege to have known him. After a short illness he died at the age of 81 at Wokingham, Berks, leaving a widow, two sons, and a daughter.

Dr. GEORGE EDWARD CARTWRIGHT WOOD, who died at Bexhill on Christmas Day, was a B.M.A. Scholar in 1894, and for many years director of the laboratories of the Metropolitan Asylums Board at Sutton, Surrey. He graduated M.B., C.M. at the University of Edinburgh in 1885, took the English Conjoint diplomas in the following year, and soon afterwards proceeded to the B.Sc. degree in Public Health and the M.D. of Edinburgh. Dr. Cartwright Wood was a member of the Physiological Society, and of the British Medical Association for forty-four years. Before entering the service of the Metropolitan Asylums Board he had been bacteriologist at the laboratories of the Royal Colleges of Physicians and Surgeons. He contributed papers on enzyme action and on bacteriological subjects to the *Proceedings of the Royal Society of Edinburgh*, to the *Klinische Wochenschrift*, and to the *Comptes rendus de l'Académie*

Française. He was the last surviving son of Thomas Wood of Baileyfield, Portobello, and St. Mary's, Mount Peebles.

Dr. CECIL EDWARD CARPMAEL, who died suddenly on January 22 at Guildford, had long practised in Dulwich Village, London, S.E. He was born on March 4, 1870, and from Christ's College, Finchley, went to Guy's Hospital in 1887, qualifying as M.R.C.S., L.R.C.P., and M.B., B.S.Lond. in 1894. At Guy's he was in succession house-surgeon, resident obstetric officer, and resident medical officer of the paying ward. After he had settled in practice in South London Dr. Carpmael was appointed assistant surgeon to the South-Eastern Hospital for Children at Sydenham, medical officer to the Governors of Dulwich College, and medical officer to Alleyn's School, Dulwich. During the last war he was medical officer and anaesthetist at the Southwark Military Hospital. He had been a member of the B.M.A. for thirty-six years.

The passing of Dr. WILLIAM O'CONNOR HUNT (writes C. E. M.) has overshadowed Peckham, and indeed many parts beyond, with grief. It was typical of him that he should carry on at his work almost to the moment of his death, though he had been ill for nearly a year. Dr. Hunt qualified in Ireland, and had practised in Peckham for over twenty years. During this time his skill and personality endeared him to the hearts of his patients. He was a man of unusual energy and ability. Before he was 21 he was managing director of a chain of chemists' shops in Ireland, and it was during this time that he began his studies in medicine. His kindness—which brought upon him the blessing of many a poor home—and his extraordinary patience and gentleness, both in and out of the surgery, arose from his deep sympathy for his fellow men. He spent his life on earth doing good to others and, like the wise steward, ranged about him a host of friends.

FRANK JOHN HATHAWAY, M.D., for many years surgeon to the King Edward VII Hospital, Windsor, died in that hospital on January 28. The son of John Hathaway, he was born in India on January 14, 1877, and was educated at Aldenham School, the University of Edinburgh, and St. Bartholomew's Hospital. He graduated M.B., Ch.B.Ed. in 1899, and after serving as civil surgeon in the South African Field Force returned to Edinburgh to take his M.D. in 1902. He had already held house-surgeoncies at the West Bromwich Hospital and the Swansea Hospital. Dr. Hathaway began practice in Windsor in 1903, and besides his appointment at the King Edward VII Hospital he was surgeon to the Royal Holloway College, and to the Imperial Services College after it moved to Windsor. During the last war he served for nearly two years as surgical specialist with a casualty clearing station, with the rank of temporary captain R.A.M.C. He joined the British Medical Association in 1912 and was chairman of the Windsor Division in 1926-7. He published a number of papers on surgical subjects in these columns at about that time.

The following well-known medical men have died abroad: Dr. EDUARD VILHELM EMIL MAAR, professor of the history of medicine at the University of Copenhagen, honorary member of the Royal Archaeological Institute of Great Britain and Ireland, aged 68; Dr. C. WINKLER, formerly professor of psychiatry and neurology at Utrecht and Amsterdam, honorary member of the Sections of Neurology and Psychiatry of the Royal Society of Medicine, aged 86; Dr. ERNEST DE MARIGNAC, one of the pioneers of bacteriology in Geneva, aged 90; Dr. PAUL SCHROEDER, formerly professor of psychiatry at Leipzig University, and founder of the *Deutsche Gesellschaft für Kinderpsychiatrie und Heilpädagogie*, aged 67; Dr. ENRIQUE SUÑER, president of the Spanish Red Cross, formerly professor of paediatrics at Valladolid, and founder of the National Child Welfare School in 1925; Dr. FRIEDRICH KOESTER, co-editor of *Deutsche Tuberkulose Blatt*, senior physician to the Hoheneimberg Sanatorium in Westphalia, aged 45; Dr. LUIS M. ALLENDE, professor of clinical surgery and orthopaedics in the faculty of medicine of Cordoba, Argentina; Dr. LEOPOLDO URIARTE, whose name is associated with plague control in Paraguay (1899) and in Northern Argentina (1919); and Dr. ALLEN KRAMER KRAUSE, editor of the *American Review of Tuberculosis* and of the American section of *Tuberele*, and author of numerous articles on tuberculosis, aged 60.

Universities and Colleges

UNIVERSITY OF OXFORD

Prof. E. L. Kennaway, D.M., F.R.S., F.R.C.P., Director of the Chester Beatty Research Institute of the Royal Cancer Hospital, has been elected an honorary Fellow of New College.

UNIVERSITY OF CAMBRIDGE

At a Congregation held on January 24 the following medical and surgical degrees were conferred by proxy except where indicated by an asterisk:

M.CHIR.—C. G. Rob.

M.B., B.CHIR.—G. A. Barclay, D. G. Vulliamy, W. J. M. Beveridge, J. N. Milnes, J. A. Smith, D. Caddy, W. H. Chase, J. J. Landon, C. W. M. McKean, F. E. D. Scott, G. O. Storey, E. D. Cullen, J. P. Donnell, S. E. Large, J. D. Atwell, J. H. Tasker, H. Butler, E. J. S. Evans. H. McColl, T. N. Fison, W. H. Scott-Easton, *W. H. Tattersall, *P. G. Jeffries.

M.B.—R. Cairns. * In person.

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examinations indicated:

M.B., B.CH.—*Hygiene:* W. S. Hill, Betty J. Mollin, D. L. Mollin, Dilys M. Rees.

D.P.H.—*Part I:* Dilys Ll. Davies, Freda M. O. Graham, A. Griffiths, Mary D. Owen, Margaret R. Wade. *Part II:* R. W. Thomas.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At the quarterly Comitia of the Royal College of Physicians of London, held on January 29, with Sir Charles Wilson, President, in the chair, Dr. S. A. Henry was appointed Milroy Lecturer for 1943, his subject to be "The Health of the Factory Worker in Wartime."

The President gave an account of his recent visit to America and of his conferences with the medical authorities in Washington, Ottawa, and New York.

Membership

The following candidates, having satisfied the Censors' Board, were admitted Members of the College:

John Apley, M.D.Lond., Flight Lieut., R.A.F.V.R., Richard Alan John Asher, M.B.Lond., James Carson, M.B.St. Andrews, Ronald Verdun Dent, M.B.Camb., George Roche Fearnley, M.B.Lond., Israel Gordon, M.D.Ed., John McCrae Kilgour, M.D.Manitoba, Captain, R.C.A.M.C., John William Magladery, M.D.Toronto, John Melville Maline, M.B.Birm., Walter Herman Hodgson Merivale, M.B.Lond., Clarence Montague Miller, M.B.Lond., Flying Officer, R.A.F.V.R., Margaret Eleanor Morgans, L.R.C.P., Muriel Lina Newhouse, M.B.Lond., Robert Barrie Niven, B.M.Oxon., Robert Dennistoun Scott, M.B.Camb., Agnes Hallimond Wilkinson, M.B. Birm.

Licences and Diplomas

Licences to practise physic were granted to the following 279 candidates (including 37 women) who had passed the Final Examinations in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the necessary by-laws:

Joyce M. Ackland, R. H. Ahrendfeldt, J. A. Ainslie, R. C. P. Aldridge, Margaret B. Allchin, Joan M. L. Apted, T. C. R. Archer, Winifred N. Backhouse, C. H. J. Baker, Margaret E. R. Balfour, G. M. Barrett, A. C. Barthels, D. G. B. Bennett, H. Bentley, B. A. S. Bhalla, J. Birch, J. W. Bishop, V. Blackman, S. H. Bockner, R. B. Body, V. M. Borrelli, D. E. Bottrill, Sheila A. Bowden, Irene J. S. Bramley, J. D. Broadbent, D. H. Brown, J. K. Brown, Dorothy B. D. Callander, G. Canti, B. S. Cardell, Joyce L. Chamberlain, C. J. Champ, Lilian M. Chant, D. J. Charley, A. L. M. Christie, R. Citron, A. S. Clark, T. E. Cleghorn, N. K. Contractor, P. B. Counsell, H. G. Coupland, C. O. Crawford, D. H. Crook, W. G. Cross, Mary H. Cutting, I. S. Dalton, W. G. Dangerfield, N. A. Daniel, P. M. Daniel, C. St. J. Davies, C. M. Davies, Joyce A. Davies, M. E. Davies, P. T. Davies, Ethel L Deas, J. L. D'Silva, Elizabeth S. A. de Wit, D. G. Dixon, A. P. Douglas-Jones, H. D. Doyle, J. H. Ebbetts, D. F. Edmiston, C. O. Edwards, T. A. B. Edwards, F. A. O. El Gabbani, O. Englander, D. T. R. Evans, D. R. Evans, H. Ezriel, P. Farr, P. J. Fawkner-Corbett, D. P. Finnegan, A. O. Foster, H. McD. Forde, R. Fothergill, E. H. M. Foxen, F. Frank, G. C. Franklin, J. E. Gabb, B. F. Gans, J. G. Gant, H. Gavurin, A. W. Gibbons, G. Gimmack, C. J. Glass, P. Goldscheider, A. H. Golledge, W. W. Gooddy, S. E. Gordon, D. W. Gould, Mary B. Graham, R. J. D. Gray, E. Greenwood, E. P. Griffiths, J. E. H. Griffiths, I. Grossmann, Maria E. Grossmann, H. O. W. Grosvenor, J. A. Guilfoyle, L. Haas, E. Haigh, J. P. Haile, M. H. Hall, W. S. Hall, W. A. Hamer, M. S. Handley, E. A. Hargreaves, Margaret Hargreaves, J. J. Hayward, V. L. Helm, F. G. Herman, H. D. G. Hetherington, Inez Hewitt, W. Hewitt, I. T. T. Higgins, F. E. Hobbs, E. Holland, T. D. S. Holliday, Cecil D. Hopkins

L. Hornung, C. Howick-Smith, P. E. Hughesdon, A. Jakobovits, J. G. H. James, J. B. Jayne, J. T. M. C. Jenkins, J. D. Johnson, I. L. Jones, B. Juhn, A. R. Kagan, A. Kagwa, K. G. Kapoor, S. L. Kaye, Anna R. Kemp, T. L. Kennedy, D. H. King, Irene M. V. King, Helen G. Kirk, Bertha Klempman, J. Knowelden, J. A. Knowles, B. Kohn, B. Kustow, M. G. Langdon, D. A. Langley, J. R. Lauder, M. N. Laybourne, Lorna E. Lethbridge, H. B. M. Lewis, E. Lewit, F. M. Liebmann, N. P. W. Littler, G. H. T. Lloyd, J. Lowy, B. S. Lush, Vivien V. Lutwyche, L. A. McAfee, W. H. McAleenan, Mary K. McCarthy, E. A. McDowell, H. P. E. MacFarlane, Monica K. Mack, R. D. MacLean, A. C. McLeish, D. L. T. Macsherry, P. B. Maling, J. V. Mandel, H. N. Mansfield, Pauline C. Marshall, V. H. Martindale, P. B. Maxted, I. Mazin, B. Messer, A. H. Michael-Phillips, L. F. Miller, J. N. Milnes, A. T. Moorhouse, J. A. U. Morgan, D. S. Morris, V. O. Ll. Morris, T. G. S. Murray, W. H. Myers, F. W. Nash, R. T. Nicholas, R. C. E. Norman, E. R. Nurse, R. Ogley, O. Olbrich, D. S. Orr, Barbara D. Owens, A. C. Parkinson, H. L. Patney, M. B. Paul, J. F. Pelmore, D. V. Phillips, G. H. N. Phillips, W. L. F. Pilsworth, J. Pinching, N. M. F. P. Pitt, W. H. P. Poad, P. J. Poels, C. E. Powell, G. F. Purves, Kathleen M. Rains, R. V. Read, W. Recht, A. Rees, D. D. Ll. Rees, E. Rhoden, W. S. Rhodes, J. P. V. Rigby, B. W. T. Ritchie, J. S. Rix, R. R. H. Robertson, L. C. Robson, H. M. Rose, A. Roth, R. T. Routledge, S. R. Rubin, J. E. Russell, R. Schwinger, J. P. Scrivener, B. Silbiger, S. Singh, M. Slade, D. Slovick, J. R. Soddy, J. T. Spare, Helen S. Standley, P. E Steele-Perkins, J. Stein, B. J. Stephens, Edna H. Stern, W. J. Stevens, S. D. Stock, F. G. Stoddart, P. H. D. Stone, E. W. Street, Olive Sutcliffe, W. H. Tattersall, D. H. Teasdale, D. J. Thomas, I. J. Thomas, J. I. Thomas, Nora Thomas, T. J. Thomas, R. E. M. Thompson, P. A. Thorn, C. D. Thornley, A. B. Tompkins, A. C. Turner, E. G. Turner, P. S. Tweedy, E. F. Twiss, J. S. Twist, C. R. Veall, A. Venner, P. M. Vicary, D. A. Vrynwy-Jones, R. H. Walker, P. R. Walsh, Barbara H. Ward, R. H. Welch, T. A. Werner, K. W. Wilkinson, P. E. D. S. Wilkinson, J. Wilks, J. E. Williams, N. Williams, J. M. Wilson, M. G. Wilson, R. R. Wilson, Matilda Winternitz, M. Wohl, B. Wolman, F. E. Woodthorpe, Marion E. F. Woolaston, J. H. Zibi, F. B. Zwink.

Diplomas in Public Health were granted, jointly with the Royal College of Surgeons of England, to G. M. Hobbin, H. Lomas, and A. J. Moss-Blundel; as were ten Diplomas in Psychological Medicine and three Diplomas in Laryngology and Otology to the candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of January 24 (p. 132). Twenty-nine Diplomas in Anaesthetics were granted to the candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of December 27, 1941 (p. 929); and Diplomas in Medical Radiology to D. R. F. Bertram and C. H. Goldmann.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the requisite examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P. &S.Glas.:

B. Barnett, H. L. Cahn, P. Capaldi, J. B. Donald, E. McH. N. Dunlop, W. Forster, Pamela P. Griffith, C. L. Gunn, J. H. Hilditch, J. Hothersall, I. Hurwitz, I. Joffe, J. R. Kyles, H. J. Modlin, A. F. Morgan, A. Mackie, M. Niven, E. A. Novick, W. A. Ogilvie, M. Rapoport, A. O. Stein, Harriet N. Stein, A. B. Stewart, Gim Phee Toh, Margaret O. Withof-Keus, L. Wollman.

Luise Wislicki, a graduate of a recognized foreign university, was also admitted a licentiate.

The Services

ARMY AWARD

The M.C. has been awarded to Captain Leonard Babty, R.A.M.C., in recognition of gallant and distinguished services in the Middle East.

MENTION IN DISPATCHES

Temporary Surgeon Lieut. John McDowell Teasdale, R.N.V.R., has been mentioned in dispatches for good services and devotion to duty.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieut. DAVID ANDERSON MILN, R.N.V.R., who lost his life in Malaya in January at the age of 26, was the only son of the late D. A. Miln and Mrs. Miln of Witcombe, Gloucestershire, and formerly of Forest Hill, London. He qualified M.R.C.S., L.R.C.P. in 1939, and was a member of the British Medical Association. He entered the R.N.V.R. as a temporary surgeon lieutenant in June, 1940.

ROYAL ARMY MEDICAL CORPS

Prisoner of War

War Substantive Captain Robert James Finlay Howe.

ROYAL AIR FORCE

Acting Squadron Leader CHARLES EVANS ELLIOTT, who was killed in action in the Far East in January, was the son of the late Dr. C. C. Elliott of Leicester. He received his medical education at the University of Cambridge and St. George's Hospital, qualifying M.R.C.S., L.R.C.P. in 1934, and taking the degrees of B.Chir. in 1936 and M.B. in 1939. He practised in Leicester until 1936, when he moved to London. He had been ear, nose, and throat and eye house-surgeon, resident obstetrician, and second anaesthetist and casualty officer at St. George's Hospital. He entered the R.A.F.V.R. as flying officer in April, 1939, was promoted flight lieutenant a year later, and was recently given the acting rank of squadron leader.

INDIAN MEDICAL SERVICE

Lieut. IAIN ALASDAIR MACMILLAN BEATON, who died at Rawalpindi on January 9, was educated at the University of Glasgow, where he graduated B.Sc. in 1934 and M.B., Ch.B. in 1937, taking also the D.P.H. in 1941. After holding the posts of house-surgeon at the Glasgow Royal Maternity and Women's Hospital, house-gynaecologist and house-physician at the Western Infirmary, Glasgow, and medical officer at the County Hospital, Cleland, Lanarkshire, he entered the I.M.S. as temporary lieutenant in January, 1941. He leaves a widow.

Medical Notes in Parliament

Medical Services in Invasion

The MINISTER OF HEALTH, in reply to a question about the steps that had been taken by his Department to ensure effective co-operation between the medical services on the duties they would be called upon to perform in case of invasion, stated on January 27 that close liaison was maintained between medical officers of the Service Departments and his Department, both at headquarters and in the regions.

The Minister was also asked what steps had been taken by his Department to inform medical practitioners of the scheme by which, in emergency, the local medical officer of health might requisition their services for such work as he deemed urgent; and whether such calls would necessarily take precedence of urgent duties of which such medical officers of health might be unaware. Mr. ERNEST BROWN said that the arrangements under which the medical officers of health of scheme-making authorities might call on doctors available to reinforce the hospital and first-aid-post services, and for other emergency duties, were generally known among the profession locally, and those selected in advance for certain duties were duly informed. The lists of available doctors were compiled in consultation with Local Medical War Committees, which were aware of the official commitments of the doctors, and therefore the last part of the question should not arise. The medical officer of health would not call on a doctor to assist in the services under his control if the doctor were actually engaged at the time on urgent private work.

Mr. GROVES asked if the Minister would take steps to ensure that, in case of invasion, medical practitioners were not required by the civil authorities to remain idle awaiting problematical calls to serve with mobile first-aid units when their services might be urgently needed at other places. Mr. BROWN replied that the arrangements for calling on practitioners not already attached to the civil defence services to serve with mobile first-aid units in an emergency only applied to such practitioners as were available at the time. It was clearly laid down in the instructions that practitioners were not to be called on unless there was a real and urgent need for their services, in order to avoid the danger of diverting them from other work where the need might be still greater. If Mr. Groves was referring to practitioners attached to mobile first-aid units but not immediately required for duty with those units, it was within the discretion of the medical officer of health in charge to make use of their services in another capacity or to release them temporarily for other duties.

Panel Doctors' Contract

The question was asked in the House of Commons on January 27 whether, in view of the fact that the contracts between insurance committees and medical practitioners applied only to

persons with the income limit of £250 per annum, the Minister of Health would introduce a new contract and consider whether medical practitioners should then have the right to decline to enter into a new contract covering the extended income limit. Mr. ERNEST BROWN replied that as the form of contract between medical practitioners and insurance committees did not contain a reference to an income limit, it was not necessary to introduce a new contract. A practitioner was entitled to withdraw from the medical list of an insurance committee by giving the necessary notice.

Red Cross Brassards

Captain MARGESSON stated on January 27 that brassards with the Geneva Cross were issued to all officers of the Army Medical Services in accordance with Article 21 of the International Convention for the Amelioration of the Conditions of the Wounded and Sick in Armies in the Field. These brassards were required to be worn when serving in a theatre of active operations, and in connexion with operational exercises when so ordered by a General Officer Commanding.

Domestic Service and the Call-up

On January 27 Mr. TOMLINSON, replying to Sir Henry Morris-Jones, said that the Minister of Labour had considered further the question of domestic service in relation to man- and woman-power. It was not possible to lay down hard-and-fast rules as to the amount of domestic service to be allowed to households of varying size or composition. Each case must be considered on its merits. Instructions had been issued laying down the general principle that, while pre-war standards could not be maintained, women in private domestic service who were clearly essential to a household should not be expected to move unless they could be replaced. Special consideration would be given where one domestic worker only was employed in any household if (among other circumstances) the employment was in a doctor's household.

Prisoners of War Committee

On January 27 Captain MARGESSON, answering Mr. Ness Edwards, stated that the Imperial Prisoners of War Committee and its two subcommittees were functioning entirely satisfactorily. Ten meetings had so far been held. Conditions prevailing in British prisoner-of-war camps under German or Italian control were being kept under close watch as the result of regular inspections by the protecting Power and the International Red Cross Committee; and that where any breach of the Convention was observed a prompt protest was made to the enemy Government concerned.

Fitness for Service Over-seas

On January 27 Captain MARGESSON, replying to Mr. Dobbie, said that officers commanding units were responsible for ensuring that the medical classification of their units was at all times complete and up to date. Before mobilization for over-seas, officers, nurses, and other ranks who appeared to be below the standard of fitness required for their unit were transferred to a unit where a lower standard of fitness was accepted or were brought before a medical board. Between mobilization and proceeding over-seas, weekly medical inspections were carried out to ensure freedom from infectious or contagious diseases. Only personnel of medical categories A and B were considered fit for oversea service.

Tuberculosis Mortality

The following table of deaths in England and Wales from tuberculosis was furnished by Mr. ERNEST BROWN on January 29:

	Males	Females
Respiratory Tuberculosis:		
Second quarter, 1939	3,291	2,249
" " 1940	3,394	2,421
" " 1941	3,849	2,640
Tuberculosis (Other Forms):		
Second quarter, 1939	635	520
" " 1940	715	594
" " 1941	778	758

Capitation Fee

The MINISTER OF HEALTH on January 29, in reply to a question, said that before the capitation fee was increased he had discussed the matter on more than one occasion with representatives of the Insurance Acts Committee. The committee referred his offer to a special Conference of Representatives of Local Medical and Panel Committees, which was held on July 31, 1941. The Conference passed a resolution accepting the offer, without prejudice to the claim for an increase in the basic fee of 9s. and to the claim to a cost-of-living increase when such an increase was given to comparable sections of the community. In these circumstances he saw no necessity for further consultation with the medical profession in the matter.

Coupons for Pneumonia Jackets.—On January 27 Sir JOCELYN LUCAS asked the President of the Board of Trade if he was aware that chemists were not allowed to sell pneumonia jackets without coupons, even when ordered by a doctor; and, as these were only required in cases of extreme urgency and coupons were not always available, he would take steps to see that lives should not be endangered through rigid adherence to these instructions. Sir ANDREW DUNCAN said he was looking into the matter and would communicate with Sir Jocelyn Lucas as soon as possible.

Medical News

The annual general meeting of the Association of Applied Biologists will be held on Friday, February 20, at 11 a.m., in the London School of Hygiene and Tropical Medicine, Keppel Street, W.C. A symposium on domestic entomology has been arranged, and among those taking part will be Prof. P. A. Buxton, Mr. J. S. Busvine, Dr. K. Mellanby, Mr. C. G. Johnson, and Mr. H. G. H. Kearns. Visitors will be welcome.

A meeting of the Tuberculosis Association will be held at 26, Portland Place, W., on Saturday, February 21. Following a council meeting at 9.45 a.m., there will be a statement by the president, Dr. G. T. Hebert, on the future policy of the Association at 10.30 a.m., and at 11.30 a.m. there will be a discussion on "The Rehabilitation of the Tuberculous."

Prof. J. E. Gordon will deliver a lecture on "Infectious Diseases" at the Weston Hotel, Bath, on Thursday, February 12, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

The University Extension and Tutorial Classes Council, in co-operation with the Central Association for Mental Welfare, proposes to hold again this year a course of lectures and clinical instruction for medical practitioners on mental deficiency and allied conditions. The course, which will probably be held in the second half of March, will include lectures on the nature of mental deficiency, administrative procedure, the work of the school medical officer in relation to defectives, and the psychology of defectives, and clinical work. The course can be held only if sufficient applications are received, and intending candidates should apply at the earliest possible date, but in any case by February 28, to Miss Evelyn Fox, c/o University Extension Department, University of London, 24, Buckingham Palace Road, London, S.W.1.

A conference on "Physical Education in Post-war Reconstruction," arranged by the Ling Physical Education Association and the National Association of Organizers of Physical Education, is being held at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Friday and Saturday, February 6 and 7.

The British Federation of Social Workers is arranging a conference to be held at Caxton Hall, Westminster, S.W., on February 21 and 22. The subject for discussion at the first session is family life: the impact of the war and the elements that have resisted change. The second session will be devoted to the family and community life, and the use made of nurseries, communal meals, clubs, shelters and rest centres, markets and transport, etc., medical services, and the social services of the courts, Citizens' Advice Bureaux, religious organizations, and political groups. At the third session a discussion on the social services will be opened by a Charity Organization Society worker, a psychiatric social worker, and a hospital almoner. At the fourth and final session the preceding discussions will be summarized and reviewed. Further information may be had from the conference secretary of the Federation, 41, Whitehall, S.W.1.

Sir Auckland Geddes, G.C.M.G., M.D., whose elevation to the peerage was announced in the New Year Honours List, has taken the title of Baron Geddes of Rolvenden in the county of Kent.

The King has authorized Prof. Harry Chapman Sinderson, C.M.G., M.V.O., O.B.E., M.D., to wear the Insignia of the Second Class (Civil Division) of the Order of Al Rafidain, conferred by the King of Iraq in recognition of valuable services rendered by him.

A National Institute of Hygiene will shortly be opened at Guayaquil, Ecuador, for research on various problems in epidemiology and preventive medicine, including malaria, hookworm, yaws, and tuberculosis.

The Public Health Office at Nuremberg has opened a dispensary for speech disturbances. Similar dispensaries in Germany are functioning at Düsseldorf, Cologne, and Münster.

Several central offices for the collection and preservation of blood have recently been opened in Italy for the use of the Army and civilian population.

The figures for typhus in the German Reich (*Reichgesundheitsblatt*, 1941, **44**, 778) since January 1, 1941, are 1,667 cases with 274 deaths.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the notifications of whooping-cough, diphtheria, and measles were respectively 79, 15, and 38 fewer than in the preceding week. Higher figures were recorded for scarlet fever 85, cerebrospinal fever 34, dysentery 30, paratyphoid 2, and typhoid 6.

The distribution of the common infectious diseases of childhood shows that relatively large centres of infection exist, especially in Lancashire and Yorkshire, West Riding, these counties contributing over one-third of the total cases of diphtheria for the whole country: Lancashire 241 cases, and Yorkshire, West Riding, 136. The combined figure for scarlet fever for Staffordshire 83, Lancashire 166, and Yorkshire, West Riding, 110, was slightly more than one-third of the total for the country. Over one-third of the recorded cases of measles were in two counties: Surrey 197 and Lancashire 113. The cases of whooping-cough were slightly more widely distributed, but 669 of the 1,601 notifications were recorded in five counties: Essex 131, Kent 117, London 177, Middlesex 116, Yorkshire, West Riding, 128

In the outbreak of typhoid in Devonshire, St. Thomas R.D., which began in the preceding week with 9 cases, 15 more cases were notified.

There was an increase in the number of cases of dysentery in Kent, Royal Tunbridge Wells M.B., where 24 cases were notified, compared with 16 in the preceding week. Twenty-seven cases were notified in Lancashire (St. Helens C.B. 9, Blackburn R.D. 8).

The 177 cases of cerebrospinal fever were distributed among forty-one counties, compared with 143 cases in thirty-five counties in the preceding week.

In *Scotland* notifications were fewer than in the preceding week. Dysentery, which was an exception to the general decline, increased by 7 cases, Renfrew County 12, Edinburgh 7, and Glasgow 7, being the areas most affected.

In *Eire* only 11 cases of measles and 12 cases of whooping-cough were reported during the week from the rural district of Mountmellick, Co. Laoighis, notifications in the preceding week having numbered 96 and 36 respectively.

Last week's table, being a summary of the statistics of the first epidemiological weekly period of the new year, should have been numbered 1.

Returns for the Week Ending January 24

The returns for England and Wales included the following notifications: Scarlet fever 1,076, whooping-cough 1,512, diphtheria 905, measles 969, pneumonia 1,158, cerebrospinal fever 136, dysentery 103, paratyphoid 9, typhoid 9. During the week 74 deaths were attributed to influenza in the great towns.

No. 2

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 17.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942					1941 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	177	13	33	4	7	293	24	60	6	4
Deaths		1	1				3	3		
Diphtheria	1,013	38	249	29	37	1,195	33	385	26	30
Deaths	33	1	8	2	1	37	1	7	—	5
Dysentery	128	7	32	—	—	111	47	81	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	—	—	—	1	1	4	—	1	—	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						11	2	2	3	1
Deaths						—	—	—	—	—
Erysipelas		—	55	5	2		32	65	7	—
Deaths		—	—				1	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	33	2	9	7	—	38	2	6	10	—
Measles	896	77	81	65	5	14,798	490	301*	—	25
Deaths	1	—	—	—	—	26	2	4	4	—
Ophthalmia neonatorum	61	1	20		—	70	2	20		—
Deaths										
Paratyphoid fever	8	—	1	—						
Deaths	—	—	—	—						
Pneumonia, influenzal†	1,028	72	19	3	11	1,548	95	25	26	12
Deaths (from influenza)	62	15	6	—	3	99	17	9	14	6
Pneumonia, primary		54	363	13	14		84	355	14	21
Deaths				16					23	
Polio-encephalitis, acute	—	—				4	—			
Deaths										
Poliomyelitis, acute	6	—	1	—	—	14	2	2	1	—
Deaths			—					—		
Puerperal fever	3	3	4	1	—	1	1	15	1	1
Deaths		—					—			
Puerperal pyrexia	159	11	16		2	113	1	20		1
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,047	32	223	38	35	1,281	81	180	51	33
Deaths	2	—	—	—	—	1	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	24	—	1	6	—					
Deaths	1	—								
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,601	177	69	22	3	3,251	33	417*	—	27
Deaths	16	6	3	1	—	33	—	15	1	1
Deaths (0–1 year)	398	48	78	28	22	412	24	80	39	29
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,557	820	721	245	157	7,614	1,230	1,014	317	236
Annual death rate (per 1,000 persons living)			16·2	16·3	‡			22·1	21·0	20·7
Live births	4,942	494	826	295	206	4,972	324	868	270	208
Annual rate per 1,000 persons living			17·1	19·6	‡			17·6	17·9	18·2
Stillbirths	229	12	44			183	5	46		
Rate per 1,000 total births (including stillborn)			51					50		

* Notifications in certain administrative areas only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS of their articles should communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be sent to the Secretary.

TELEPHONE NO.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*: SECRETARY, *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

"Ether Convulsions"

Dr. W. L. ENGLISH (Crewe) writes: Has any case of an "ether convulsion" been reported when ether alone has been used as an anaesthetic?

Treatment for Threadworms

Dr. HUGH G. WATSON (Bakewell) writes: "Inquirer" (January 24, p. 135) would, I am sure, find some help in an article on the above subject by Sir Philip Manson-Bahr in the *Lancet* of December 28, 1940. This describes a treatment by the administration of phenothiazine, a preparation which "Inquirer" does not mention in his query, and which I assume, therefore, he has not used. I do not know if this tablet is now on the market. It is prepared by Imperial Chemical Industries Ltd. I have used it with good results in some long-standing cases, but I have not had occasion to obtain a supply other than the first one, which was given to me by the makers and which was so generous that I still have some. Hence my statement that I do not know if it is now on the market.

*** An annotation on phenothiazine appears in this issue.

Dr. C. W. J. BRASHER (Nether Stowey) writes: Referring to "Inquirer's" note, I would suggest a course of caprokol capsules (hexyl-resorcinol in olive oil). Although this drug is generally prescribed as a urinary antiseptic, the following cases suggest that it is a specific in cases of oxyuric infestation. (1) A septuagenarian male patient observed numerous actively motile oxyuris embryos in his faeces. These disappeared after two or three days' administration of two caprokol capsules thrice daily. Although the patient had an eosinophil count of 12%, suggestive of a more serious infestation, he never saw any adult oxyurides. There was no recurrence. (2) A girl aged 9 years had a severe infestation. Her mother reported that "her motions are alive with threadworms; some are quite long ones." The parasites disappeared entirely after administration of 25 caprokol capsules. "Inquirer" states in his last sentence: "In this case their habitat is solely the bowel." Would it not be advisable to order one or two vaginal douches? It is well known that in female patients threadworms migrate frequently from the rectum to the vagina.

Dr. EDWARD R. PEIRCE (Liverpool) writes: With reference to the letter from "Inquirer" I would suggest that in addition to the treatment described the following routine should be rigidly carried out for at least one month but preferably six weeks. (1) Immediately after waking in the morning the whole of the bathing-drawers area should be scrupulously washed, particular attention being paid to the buttocks and around the anus. (2) Some garment, such as cotton trunks, should be worn during the night; this garment must be washed each day. (3) As a protection against involuntary scratching during the night gloves should be provided, preferably without fingers. This procedure is based on the life-history of the threadworm, and eggs can be demonstrated on the skin of the buttocks, around the anus, and also on the clothes. I have found this treatment to be effective in many intractable cases.

Dr. ST. VELDEN (London) writes: I would like to make a suggestion for the treatment of oxyuriasis based on my own experience as a general practitioner in Czechoslovakia. In obstinate cases I used to prescribe: santonin 0.03 gramme, naphthol 0.4 gramme; one powder to be taken at 7 a.m., 10 a.m., and 1 p.m. with tea or water on three successive days. Milk should not be taken during that time. Ung. hydrarg. (grey ointment) is applied at night round the anal region when the powders are taken. Sometimes I noticed a discharge from the vagina, and used to cure it with "devegan" (Bayer), one tablet inserted at night into the vagina. Instead of "devegan," stovarsol vaginal tablets (M & B) can be used. I should be very glad to hear about the results.

A Quick Treatment for Scabies

Dr. L. LICHTENSTEIN writes: In reply to E. W. (January 17, p. 98) the formula for the treatment of scabies (potash 10 parts, precipitated sulphur 25 parts, petroleum jelly 125 parts) is known in Continental literature as Whitfield's ointment. It is not identical with Whitfield's ointment in the *B.P.C.* Therefore the prescription should be given in all its constituents in order to avoid misunderstanding.

Income Tax

Wife as Qualified Assistant

M.D. inquires what rebate, if any, is due to a wife acting as a qualified assistant to her husband during a partner's absence.

*** The only allowances to which she is entitled are the earned income relief of 1/10 of her earnings and a fixed allowance of £45. The cost of, for example, a housekeeper necessitated by the wife's professional work is not allowable, as it is not regarded as "money wholly and exclusively laid out and expended for the purposes . . . of the profession."

LETTERS, NOTES, ETC.

Pemphigus and Vitamins

Dr. W. A. MILLIGAN (London, W.1) writes: In the annotation on pemphigus (January 10, p. 48) the following statement appears: "Among the more modern methods of treatment may be mentioned diets high in vitamin content of various kinds, all of which were useless." To this statement I take exception, based on the result of a case which has been under my care for the last three years. In 1939 a doctor aged 85 came under my care complaining of lethargy, a feeling of illness, and a bullous eruption. This eruption began in the neighbourhood of the umbilicus, and gradually appeared in other parts of the body—face, arms, chest, larynx, and genitalia. I consulted with a skin specialist, and he gave it as his opinion that it was a true case of pemphigus, and that the patient could not live longer than three or four months. On going into his history I found that his mode of living in previous months had altered: he was living in a *pension* where food was poor and vegetables very scarce. This state of things was altered as far as possible, and he was ordered extra vegetables and as many oranges as he could get. In addition he was given vitamin preparations, and took these with great regularity. Progress at first was far from encouraging, and he appeared to be getting worse—in fact, became very ill. I took him to another famous skin specialist, who at once said pemphigus and gave a very bad prognosis. However, the patient was very persevering in his vitamin treatment, and about three months after he had started it he began to show signs of improvement—that is, his eruption did not continue to come out in crops, he got much more energetic, and general improvement was marked. The treatment was persevered with, the actual vitamin preparations were varied, and in a year from date of onset he was perfectly well. I submit this case as I consider that whether it was a true pemphigus or not it had all characteristic symptoms, and it certainly reacted to vitamin treatment.

Mule Spinners' Cancer

We are asked to say that a copy of the illustrated monograph on epithelioma of the skin in cotton spinners, reviewed at length in the *Journal* of December 13, 1941 (p. 851), will be sent free of cost to members of the medical profession in contact with the cotton industry. Dermatologists interested in the subject and medical librarians may apply for one to the University Medical Library, Manchester, 13.

Oxytocic Injections by Midwives

J. H. writes from Plymouth: May one who was schooled in the value of ante-natal care protest against Dr. Clancy's implication (January 10, p. 56) that the treatment of post-partum haemorrhage from an atonic uterus should be the responsibility of the midwife. As it is the domiciliary midwife who is under consideration, anaesthesia as a cause of an atonic uterus may be excluded. It is therefore probably due either to a prolonged and difficult labour or else to some general condition of the patient, such as anaemia or debility. Why then is the case in the hands of a midwife? Surely one of the main functions of an ante-natal clinic should be to foresee such cases and to guide them into a maternity hospital. Even where ante-natal care has been inadequate, and such an emergency arises at the patient's home, the midwife should summon a doctor, or, better still, the "flying squad."